WANT TO SUPPORT TEACHERS?

FEEL SMART AGAIN

mental_floss

STEAL THIS MAGAZINE

+ SPEND YOUR MONEY ON THESE 10 INCREDIBLE PROJECTS

(SEE PAGE 36)

IS THIS THE KEY TO A BETTER POTATO? PAGE 16

SEPTEMBER/OCTOBER 2016
VOLUME 15, ISSUE 5
MENTALFLOSS.COM

$5.99

10

0 71486 01084 5

Banquet

GREAT BEER
GREAT RESPONSIBILITY™
©2016 COORS BREWING COMPANY, GOLDEN, CO

THE 1936 STUBBY

STANDING TALL HAS NOTHING TO DO WITH HEIGHT

BOTTLE IS BACK

RACQUET

INTRODUCING RACQUET,
A NEW, QUARTERLY TENNIS MAGAZINE.

—

SUBSCRIBE AT RACQUETMAG.COM
AND BUY WHEREVER FINE MAGAZINES ARE SOLD.

THE 2016 PLATYPUS AWARDS

INNOVATIONS IN TEACHING

NOW THAT WE'VE SAVED YOU ALL THAT MONEY, HERE'S ...

How to Support 10 Amazing Teachers!

p.36

FEATURES

38 Why these teenagers are embracing opera

40 Night swimming that inspires community service

40 Investigating history, Sherlock Holmes-style

43 All-new rhymes and reasons for a hip-hop curriculum

44 Where Pythagoras meets *Project Runway*

47 Building the city of the future, one Lego at a time

PLUS: The desert metropolis that never was p. 48
When the atom bomb was synonymous with summer vacation p. 52

ISTOCK (COVER CARROT, THIS PAGE)

IN EVERY ISSUE

SCATTERBRAIN

14 ROY G. BIV: Stage a protest with livestock, manipulate your carrot's DNA, and behold the diaspora of the mighty yellow M&M—everything you didn't know you wanted to know about the color spectrum

LIVE SMARTER

22 The greatest spectacle powered by hot air

24 Meet the Big Easy's icy sweet treat

26 Why we're stuck on this cultural icon

LEFT BRAIN/RIGHT BRAIN

28 The video game physics teachers love

32 How English went from drab to fab

34 Knife throwing with your family!

GO MENTAL

58 Postcards venture into uncharted territory

60 Things to do if you're feeling knotty

63 & a reason to celebrate the ampersand

64 The *mental_floss* quiz

CONTENTS

Radioactive waste's happiest foe

p. 18

The video game that redefined video games

p. 28

The city that launched a thousand balloons

p. 22

Who ya got? Marie Curie or Muhammad Ali?

p. 61

THE INDEX

A

Adminiculation	32
Atomic	
carrots	16
cocktails	54
cowboys	55

B

Baron Brabazon of Tara	64
Biv, Roy G.	14
Bobbleheads, literary	64
Borax	51

C

Cake, king	24
Cerebellum, woolen	60
Cities, apocryphal	48, 64
Cloud forests	40
Conversations, wordless	63

E

Ebon-Aide	27

F

Field trips, underwater	40
Friar Laurence	61
Fruit, gym sock-scented	17

G

Gardening, pants-based	61
Geoluhread	17
Ghost grid	49
God Gossip	39

H

Honey	19, 26

I

Injuries, soul-stealing	26
Inkhorns	33

J

Jingles	27, 50

K

Karaoke, political	64
Knife throwing	34

L

Lakes, imported	50
Lava, Technicolor	20
Lego, futuristic	49
Lobsters	18, 62, 66

M

Makeup, poetic	19
Malls	
aeronautic	23
educational	46
Manilow, Barry	27
Marriage of Figaro, The	38

O

Oranges, green	15

P

Pie, as hiding place	64
Pigs	
dissident	14
flying	64
Ponyboy	38
Pseudocide	63

R

Radiation	18, 54
Red Panda Effect	15
Redheads, drowsy	15
Ringling Brothers	34
Robots, misleading	31

S

Saucers, flying	62
Sauerkraut	62
Snails, precious	21
Sno-	
Balls	24, 25
Wizard	25

T

Tongues, rude	32
Tsunamis	41

U

Urine, uses for	
bovine	16
equine	18
human	18

V

Vikings	21, 44

W

Windmills, miniature	42
Wives, clumsy	27

Y

Yarn bombing	60
Young and the Restless, The	44

Þ

Þorfinnr the Splitter of Skulls	21

The tourism industry's weirdest mistake

p. 54

Buzzkills: Meet the bees working overtime as narcs.

p. 19

Encyclopedia Brown would have loved this!

p. 40

Data that belongs in a museum

p. 58

BYRON EGGENSCHWILER (PORTAL), ALAMY (SUNFLOWER, HOT AIR BALLOON), LUCAS ADAMS (WOMAN), ISTOCK (BEE), CARMEN SEGOVIA (DETECTIVE), STEFANIE POSAVEC (DATA).

Subscribe

to the magazine

EVERYONE'S TALKING ABOUT

Get in on the fun and subscribe today!

GO ONLINE mentalfloss.com/subscribe

OR CALL 877-717-8931

NOTABLE BOOKS FROM

McSWEENEY'S

All My Puny Sorrows
by Miriam Toews

White Girls
by Hilton Als

Information Doesn't Want to Be Free
by Cory Doctorow

Adios, Cowboy
by Olja Savicevic

STORE.McSWEENEY'S.NET

McSweeney's is a publishing company based in San Francisco. As well as operating a daily humor website, we also publish *Timothy McSweeney's Quarterly Concern*, the *Believer*, and an ever-growing selection of books under various imprints. You can buy all of these things from our online store.

X-RAY: NASA/CXC/UMICH/S.OEY; IR: NASA/JPL; OPTICAL: ESO/WFI/2.2-M

THINGS THAT MATTER

One of the more memorable teachers I had in high school was not a teacher by trade. He was an employee of a local nuclear power plant who'd been called to fill in when, at the start of my senior year, our physics teacher abruptly quit. The guy looked like Ned Flanders, which was hilarious because when we heard we'd have a sub, my friend Ben randomly commented, "Watch, he's going to look just like Ned Flanders." That was the memorable thing.

Physics: not so much. It was a fairly inscrutable subject for me—I was already shaky in mathematical confidence—and the lectures rendered it more so. I really tried. But I just did not *get it*. I wasn't even sure what exactly we were studying. Why were we analyzing balls rolling down hills? It didn't seem relevant or interesting. It just seemed hard.

I'm sure Nuclear Ned Flanders, as he became known, was great at running power plants, but, objectively speaking, he was not a very good teacher. I eventually dropped the class, and then avoided the sciences for all of college. I did not learn physics.

But the funny thing is, I'm actually thankful things turned out this way. It means that as I creep stealthily into midlife, there is a whole realm of truly fascinating study I'm just discovering. (Physics, it turns out, includes the study of things like space, time, and *how the entire universe works*. It simply does not get a whole lot more interesting than that!) And I appreciate wrestling with big, abstract ideas now. If I'd just slogged through the homework and considered myself schooled, I'm not sure I would have felt like I had to return to those concepts at this point. I'm so glad I have. (I'm even more inspired to do so by this month's Masterpiece! See page 28.)

The point of my story is obvious: that every single person who stands at the front of a classroom matters. A ton. At *mental_floss* we celebrate knowledge in everything we do. But this issue is special, because for the first time, and in a hands-on fashion, we're celebrating 10 incredible individuals whose innovative methods make math, history, language, and the sciences truly come alive for students across America. We hope you'll read their inspiring profiles (page 36) and then join us as we put our money where our mouth is: Visit donorschoose.org/mental-floss to help make their most creative visions the stuff of reality.

jessanne

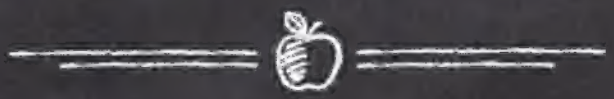
@jessanne

mental_floss

2016 PLATYPUS AWARDS

We Congratulate the 2016 Platypus Awards Winners for

INNOVATIONS IN TEACHING



Remember to do your part to support the classrooms of tomorrow. Please visit DonorsChoose.org/mental-floss to donate today!

mental_floss | DonorsChoose.org

mental_floss

VOLUME 15 ISSUE 5 SEPTEMBER/OCTOBER 2016

FOUNDERS
Mangesh Hattikudur Will Pearson

EDITORIAL
VP EDITOR IN CHIEF Jessanne Collins
CREATIVE DIRECTOR Winslow Taft
EXECUTIVE EDITOR Foster Kamer
ART DIRECTOR Lucy Quintanilla
MANAGING EDITOR Jen Doll
SENIOR EDITOR Lucas Reilly
ASME INTERN Meg Robbins
COPY EDITOR Autumn Whitefield-Madrano
FACT CHECKER Riki Markowitz PRODUCTION ASSISTANT Steph Tan
PROOFREADER Regan Hofmann

MENTALFLOSS.COM
VP DIGITAL/EDITOR IN CHIEF Jason English
EXECUTIVE EDITOR Erin McCarthy EDITOR AT LARGE Nick Greene
SENIOR EDITORS Arika Okrent, Jen Pinkowski, Abbey Stone, Jennifer M. Wood
SPECIAL PROJECTS EDITOR Beth Anne Macaluso STAFF EDITORS Erika Berlin, April Daley, Bess Lovejoy
ASSISTANT EDITORS Rebecca O'Connell, Caitlin Schneider
SENIOR WRITERS Shaunacy Ferro, Jake Rossen
STAFF WRITERS Stacy Conradt, Michele Debczak, Kirstin Fawcett, Anna Green, Chris Higgins, Kate Horowitz, Kara Kovalchik, Andrew LaSane
SENIOR DIGITAL EXPERIENCE DESIGNER Emem Offong
DESIGNER Chloe Effron PRODUCER Colin Gorenstein
RESEARCHER Jocelyn Sears PROOFREADER Betsy Johns FACT CHECKER Austin Thompson
DIRECTOR OF STRATEGY AND PARTNERSHIPS Taylor Lorenz

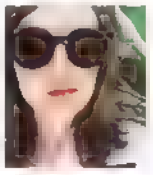
PUBLISHING
VP MARKETING Tara Mitchell
ACCOUNT DIRECTORS Dan Figura, Molly Hollister
NORTHWEST ACCOUNT DIRECTOR Steve Thompson
MIDWEST DIRECTOR Erin Sesto
SOUTHWEST DIRECTORS James Horan, Richard Taw
DETROIT DIRECTOR David Sauter
SALES ASSISTANT Alma Heredia

INTEGRATED MARKETING DIRECTOR Nikki Ettore
ART DIRECTOR, MARKETING Joshua Moore
INTEGRATED ASSOCIATE MARKETING DIRECTOR Betsy Connors
INTEGRATED MARKETING MANAGER Cara Litman
RESEARCH MANAGER Joan Cheung
MARKETING DESIGNER Triona Moynihan
MARKETING COORDINATOR Reisa Feigenbaum
AD OPERATIONS DIRECTOR Garrett Markley
SENIOR ACCOUNT MANAGER Yuliya Spektorsky
DIGITAL PLANNER Jennifer Riddell
EVP CONSUMER MARKETING Sara O'Connor
CONSUMER MARKETING DIRECTOR Leslie Guarnieri
VP MANUFACTURING AND DISTRIBUTION Sean Fenlon
PRODUCTION MANAGER Kyle Christine Darnell HR/OPERATIONS MANAGER Joy Hart

MENTAL FLOSS, INC.
PRESIDENT Will Pearson
CHIEF CREATIVE OFFICER Mangesh Hattikudur
VP STRATEGY Ethan Trex
CONTROLLER Arielle Starkman
SENIOR ACCOUNTANT Darcine Denny
ACCOUNTS PAYABLE CLERK Domenique Humphreys
GROUP CFO Kevin Morgan
CHIEF INQUISITOR Ian Leggett
CHAIRMAN John M. Lagana

COMPANY FOUNDER Felix Dennis

mental floss intern **MEG ROBBINS** won't look at carrots the same way again after writing about them for Scatterbrain on page 16. "If I see a purple, yellow, or white carrot in the store, I'll appreciate it for its quest to challenge the institution of the orange carrot, which did n't do anything to earn the power it has." She's currently working on a project with the Maine Center for Public Interest Reporting.



Illustrator **AMY MARTIN,** whose drawings grace our Platypus Awards for educational innovation beginning on page 36, is art director at *Portland Monthly* magazine. She's done work for *The Wall Street Journal*, *Fast Company*, Rock the Vote, Obama for America, and McSweeney's, which also published her first illustrated children's book, *Symphony City*.

Before **CHRIS SUELLENTROP** started writing about video games, as he does on page 28, he covered politics for Slate and *The New York Times Magazine*. When he's not writing, Suellentrop cohosts the podcast *Shall We Play a Game?*—the only place you can hear an erstwhile political editor and a former foreign correspondent dissect *Fallout 4*.

It just might be fate that **AGATA NOWICKA** was plucked to render the winners of our Platypus Awards (page 36): Her parents are both teachers. The Polish-born illustrator almost followed their path, but teaching workshops cured her of that yen. "There's even a curse in Polish: 'May you teach other people's children!'" Her work has appeared in *Elle*, *The New Yorker*, and *GQ*.

mental floss (USPS#021-941) (ISSN#1543-4702) is published six times per year, January/February, March/April, May/June, July/August, September/October, and November/December, by Mental Floss Inc., 55 West 39th Street, 5th Floor, New York, NY 10018. Periodical postage paid at New York, NY, and additional mailing offices. POSTMASTER: Send address changes to Mental Floss c/o TCS, P.O. Box 62290, Tampa, FL 33662-2290. Basic subscription rate: One year (6 issues) $27.97; Two years (12 issues) $45.97. Canada: Add $10 per year. International: Add $35 per year.

International Newsstand Distribution by Curtis Circulation Company, New Milford, NJ. **LEGAL SERVICES:** Jacobs & Burleigh LLP; **ACCOUNTING ASSISTANCE:** Stone, Avant and Co. P.C.

Entire contents copyright 2016, Mental Floss, Inc. All rights reserved. Reproduction in whole or in part without permission is prohibited. Products named in these pages are trade names or trademarks of their respective companies. Printed in the USA. Mental Floss is a registered trademark owned by the Executors of the Felix Dennis Estate.

COURTESY OF MEG ROBBINS, MARTIN SUELLENTROP, ADAM ADAMS (NOW KA)

In Italy, beauty is everywhere. The food and wine. Sea and countryside. Sing-songy language. And a people so warm and passionate about life.

After years of living and traveling throughout Italy, and experiencing firsthand so much of this beauty, I decided to create Ciao Andiamo. To help you discover and fall in love with all the authentic beauty and wonder that is Italy. - *Jonathan, Founder*

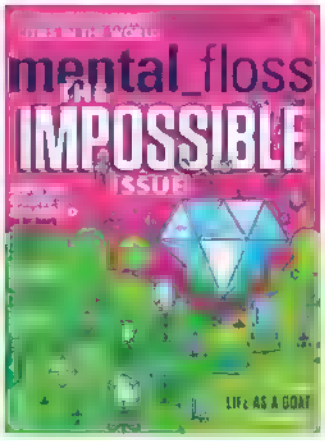
Ciao ANDIAMO

Start Planning Your Italy Adventure Today | www.ciaoandiamo.com

Letter of the Month

As an 86-year-old guy who lost his beloved wife four months ago, I find that reading beats television at any time of the day. My issue of *mental_floss* arrived yesterday, and you need to know that in reading it, grief melts away quickly and completely, as I absorb every last word and picture in the magazine. Please accept my deepest appreciation.

—PHIL DE ANGUER



ONLINE AT MENTAL FLOSS

- 15 Famous People Who Used to Teach
- 5 of History's Most Remarkable Teachers
- 20 of the Most Memorable Teachers in Television History
- 10 Classrooms (Almost) Too Cool for School
- 11 Ways School Was Different in the 1800s

Why is school out in summer?

Don't be ame farmers. For the answer, go to mentalfloss .com

BACKHANDED FELINE COMPLIMENT OF THE MONTH

I was catching up on back issues during vacation, but my cat loves your issues too. Thanks for the good reads and comfy sleeping pad!
—Allison Bishop

HEROES, JUST FOR ONE DAY

I wanted to thank you so much for your story on Abdel Kader Haidara ["The Librarian Who Took on Al Qaeda," July/August 2016]. I read it, then reread it in tears to my 6-year-old daughter. Based off of the awe in her eyes, there are a bunch of second-graders hearing all about him today in summer camp, and for that, I will be ever grateful.
—Maj. Sgt. Samantha E. Dunn, U.S. Air Force

WE LOVE YOU TOO!

On my 76th birthday, I was reading the latest issue of *mental_floss* and noticed that I have a subscription until 2022. Based on my family history, I should last just about that long. Not only is *mental_floss* my favorite magazine, I have also referenced it in a presentation. An article in *mental_floss* about cone hats ["Power Points," December 2014] inspired "The Cone-head Connection," which I gave at a conference in 2015. Numerous other articles have inspired thought, both general and out of the ordinary. Thanks for such an interesting and inspiring magazine.
—C.J. Ransom

"NO STOP SIGNS, SPEED LIMITS ..."

In "25 Flossiest Cities" [July/August 2016], you neglected to mention that a mere 342 miles north of Hell, Michigan, is Paradise, Michigan. From Paradise, you can travel to Hell (and back) in about 10 hours.
—Regina Childress

CONTACT US

FEEDBACK
letters@mentalfloss.com; @mental_floss

MEDIA INQUIRIES
renee@relativity.ventures, 908.872.3452

SUBSCRIBE
mentalfloss.com/subscribe

ADVERTISING
Will Pearson, 646.717.9500 will@mentalfloss.com

SUBSCRIBER SERVICE
mentalfloss.com/service; 877.717.8931

PRODUCTS & BACK ISSUES
store.mentalfloss.com or 855.MY.FLOSS

Drooling over the latest *mental_floss* stories include gold almond foundry making diamonds in 21 days void of human rights abuses
@girfromnat

When you finally get your first *mental_floss* mag in the mail after months of borrowing them from other people > 🐇
@abzwargz

I wish *mental_floss* came out in print monthly I love their mag. There's a ton of online content but I like print
@ezzykarabbit

MENTAL FLAWS
As many, many readers pointed out, our July/August 2016 story on "The Soviets Who Saved Rock 'n' Roll" claimed that Stalin's regime made rock records illegal in 1958. Which, impressively, was five years after he died. In 1958, Nikita Khrushchev was the Soviet premier. And yes, he was alive. We regret the error.

STOCK

THIS MONTH'S THEME
ROY G. BIV

THE TRUE RED BARON

How the Danish protest pig got its stripe

IN THE 19TH CENTURY, Denmark and Germany went to war over a slice of the southern Jutland Peninsula (today called Schleswig-Holstein). Denmark claimed the land in 1848, but 16 years later, Germany regained the territory and promptly barred any Danes who lived there from raising their country's flag. So, crafty Danish farmers started raising pigs. Through crossbreeding, they created a pig that resembled the Danish flag, featuring red fur and a prominent white belt. By the 20th century, the *Protestschwein*, or "protest pigs," had become a snorting symbol of Danish cultural independence.

HAVE YOU SEEN THIS PANDA?
When a red panda escaped from a zoo in Rotterdam, Holland, in 1978, officials asked citizens to keep their eyes peeled. Unfortunately, the panda was soon found dead—but citizens across the country continued reporting red panda sightings for months. The phenomenon called into question the accuracy of witness reports, and today the term "Red Panda Effect" is used in skeptic circles to describe how the power of suggestion can make people see something that isn't there.

SURVIVAL OF THE REDDEST
The meteorite that wiped out dinosaurs 65 million years ago also led to red tomatoes. The ash killed all but the hardiest plants—including an ancestor of the tomato, which survived by tripling the size of its genome. That boost included a gene that would later turn tomatoes red.

GET TO KNOW A PIGMENT

VERMILION

Made of: Crushed cinnabar, a mineral
Used by: Ancient Chinese, the Olmecs, and ancient Romans
Great for: Enriching wallets while bankrupting health. Cinnabar was so popular in Rome that laws were established to keep it affordable. Alas, it's full of mercury.

Scarlet Letter

Women see more nuanced shades of red because the gene that determines how a person sees the color resides on the X chromosome. (Men have one, women have two.)

FAST FACT

Doctors use 20 percent more anesthesia on a redhead than a person with another hair color.

WHAT CAME FIRST:

ORANGE THE FRUIT OR ORANGE THE COLOR?

The fruit. Medieval English speakers rarely encountered the color orange in nature—so they simply called the shade *geoluhread* (yellow-red). The fruit, imported from northern India to Europe in the 11th century, changed that. Called *orenge* by medieval Latin speakers, the fruit took over *geoluhread*'s place in English in the 1530s.

ORANGE YOU HOT?
DON'T BE FOOLED BY AN ORANGE WITH GREEN SKIN. IT'S NOT UNRIPE. IT'S FULL OF CHLOROPHYLL. THE PHENOMENON OCCURS IN TROPICAL CLIMATES AND GOES AWAY WHEN IT COOLS DOWN OR WHEN THE FRUIT IS PICKED

ILLUSTRATION BY ANDY J. MILLER STOCK (TOMATOES, ORANGES, PANDA)

Decoding the Carrot

In May, scientists officially cracked the carrot genome. Researcher **Philipp Simon** explains

How long have we been improving the carrot? Decades. The typical carrot today is roughly 40 percent more nutritious than the average carrot was 30 years ago because breeders have boosted the intensity of color. [The gene that makes a carrot orange also improves its nutrition.] By understanding how the genes work, we may be able to make it better.

Why? In the United States, 10 to 15 percent of the vitamin A in our diet comes from carrots, and while there isn't much of a vitamin A deficiency in the U.S., there is globally.

How do you map a vegetable genome? We take short chunks of a gene sequence and try to piece them together. It's like having photos of every road in your state, but each photo covers just a quarter of a mile. Your job is to take those photos and figure out how the roads fit.

What did you find? We knew the first carrots came out of places like Afghanistan 1,100 years ago. They were yellow or purple. We found that the Y and Y2 genes account for the difference in color and nutrition.

When did orange carrots show up? About 500 years ago. We know that because, in the 1950s, a Dutch carrot researcher visited art museums in northern Europe and studied the color of carrots in still life paintings. A lot of our understanding of agriculture comes from examining artwork.

Does this research go beyond carrots? Now that we know the genes responsible for that color and nutrition boost, is it possible to develop a better—and oranger—potato? Maybe! –MEG ROBBINS

THE CARROT ALPHABET

Need a brain game for when you're vegging out? Try listing carrots! Seriously, there's a variety of carrot beginning with every letter of the alphabet—with the exception of *x*. (Note: "Baby" isn't one of them.) Here are a few:

- Atomic Red
- Belgian White
- Chantenay
- Danvers
- Early Horn
- Five-Star Baby
- Guerande
- Hercules
- Imperator
- Jaune du Doubs
- Kaleidoscope Mix
- Little Finger
- Manchester Table
- Nantes
- Oxheart
- Purple Dragon
- Queen Anne's Lace
- Red Elephant
- Solar Yellow
- Thumbelina
- Uchon
- Viva La France
- Western Red
- Yaya
- Zino

INDIAN YELLOW
Made of:
Urine from cattle fed mango leaves and water (maybe)
Used by: Watercolor painters
Great for:
Debates! The "discovery" that Indian yellow was made by tinkling cattle prompted the British to ban it in the 1890s. But little evidence indicates that's how it was made.

HOLLYWOOD'S FAVORITE COLOR SCHEME

Critics say Hollywood is in a color rut—too many films and posters are dominated by orange and teal. It's true! The colors became a trend in 2000 with the arrival of digital color grading, a technique that allows editors to tweak an image's composition with a computer. (In the olden days, colorists corrected film with a chemical bath.) The digital system makes it easier to correct scenes with a common palette—that is, the orange-to-brown spectrum of most actors' skin tones. To create contrast, editors have also dialed up the blue (which lies on the other side of the color wheel). It seems the silver screen is due for a new name.

THE YELLOW INDEX

The earliest usage of the word yellow *in English appeared in* Beowulf, *to describe a shield carved from yew wood. Back then, it was spelled* geolu *or* geolwe. *More facts about yellow:*

Gabriel García Márquez's wife, Mercedes, placed a yellow rose on his writing desk every day for 55 years.

Tennis balls used to be black or white, but the International Tennis Federation changed them to yellow in 1972 to help TV viewers follow the match.

The founder of UPS wanted its trucks to be yellow. But a friend convinced him that brown would be easier to clean.

Stephen Hawking discovered that blond soccer players are 15 percent more likely to score on a penalty shootout. "This will remain one of science's great mysteries," he said.

Wimbledon keeps its tennis balls at a temperature of exactly 68°F

Made of: Crystals found in hydrothermal veins and hot springs
Used by: Ancient Chinese
Great for: Dyeing and dying. Chinese scribes used orpiment as correction fluid—an ancient precursor to Wite-Out. It was also full of arsenic.

Forbidden Fruit

The durian of Southeast Asia has a spiky exterior, soft yellow flesh, and a fetid smell that is impossible to describe. Here are some valiant attempts:

"To eat it seems to be the sacrifice of self-respect."
—BAYARD TAYLOR, 19TH-CENTURY TRAVEL WRITER

"Your breath will smell as if you'd been French-kissing your dead grandmother."
—ANTHONY BOURDAIN, CHEF

"Its odor is best described as ... turpentine and onions, garnished with a gym sock."
—RICHARD STERLING, FOOD WRITER

"Like the flesh of some animal in a state of putrefaction."
—HENRI MOUHOT, FRENCH NATURALIST

ALAMY (CARROT); BECKHAM: ISTOCK; HOUSE: D. RAN

A yellow lobster is six times rarer than a blue lobster. The chances of finding one are 1 in 30,000,000.

FLOWER POWER

Millions of sunflowers were planted around Japan's Fukushima nuclear power plant in 2011 to help decontaminate the soil. The same process, called phytoremediation, was also used to help clean up Chernobyl (the Soviets, however, also used hemp!).

In 2008, Mars, the company behind M&M's, confirmed how many yellow M&M's were in each package.

3 Gross but Fun Urine Facts!

1. In the Middle Ages, Scottish warriors didn't wear tartan kilts. They wore bright saffron-colored tunics dyed with bark, crushed leaves, or horse urine.

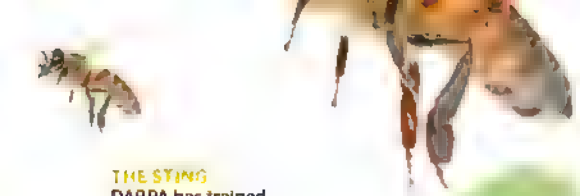
2. Some elevators in Singapore use Urine Detection Devices, which detect the odor of pee and close the elevator doors to trap the culprit until police arrive.

3. Scientists at the Bristol Robotics Laboratory in the U.K. built a microbial fuel cell in 2013 that was capable of charging a Samsung cell phone with urine.

FAST FACT

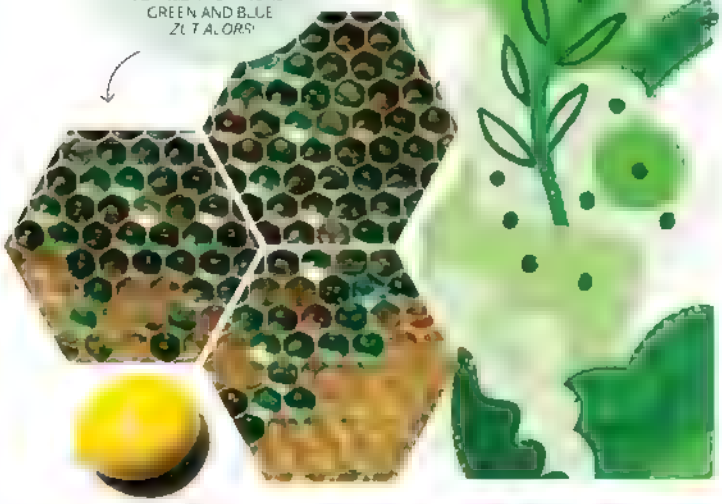
Each winter, a reindeer's eye color changes from gold to blue. This helps the retina capture more light during the sunless season.

ALAMY (SUNFLOWER); ISTOCK (BEE)



THE STING
DARPA has trained honeybees to detect heroin, cocaine, and explosives.

ALL-NATURAL FOOD COLORING
IN 2012, BEEKEEPERS IN NORTHERN FRANCE DISCOVERED THEIR BEES WERE FEEDING ON THE REMAINS OF M&M SHELLS BEING PROCESSED AT A NEARBY PLANT. IT TURNED THE HONEY GREEN AND BLUE. *ZUT ALORS!*



HINT O' MINT

T.S. Eliot wore pale green face powder, which really confused Virginia Woolf: "I am not sure that he does not paint his lips," she wrote in her diary.

ILLUSTRATION BY ANDY J. MILLER REUTERS (HONEYCOMB) ALAMY (EL. OT)

GET TO KNOW A PIGMENT

VERDIGRIS

Made of: Wine-soaked copper
Used by: Ancient Greeks, Renaissance artists, and Lady Liberty
Great for: Ruining dishes. Greeks made it by soaking copper plates in wine, but that's not necessary. You just need oxygen! It's what turned the Statue of Liberty bluish green.

HISTORY MYSTERY!

A TALE OF TWO TROGLODYTES

Remember that time you babysat a bunch of green kids in the 12th century and they got stuck in a hole? Legendary.

BY **CAITLIN SCHNEIDER**

THE VILLAGE OF WOOLPIT, England, has always been sleepy. But in the 12th century, the parish—named for a group of pits dug to trap wolves—was consumed in mystery when a boy and girl were rescued from the trenches outside of town. The kids spoke an unknown tongue, wore strange clothing nobody could describe, and ate only raw beans. Oh, and their skin was green.

Sir Richard de Calne took in the kids and tried nursing them back to health, but the boy eventually died of illness. The girl survived, and once she learned English, she told villagers a strange tale: She had been born in an underground place called St. Martin's Land, where everything was green and it was always twilight. According to her story, she and her siblings had been herding cattle and followed the cows into a cave. They became disoriented and were led out by mysterious bells, only to emerge in Woolpit.

Nobody knows the real story. The kids may have been Flemish-speaking orphans from the nearby village of Fornham St. Martin. Their grassy complexion may have been from arsenic poisoning or an iron deficiency called chlorosis. Or maybe it's just a tall tale. It doesn't help that one of the historians who recorded the story was William of Newburgh—the same guy who convinced Europeans that the continent was crawling with vampires.

GET TO KNOW A PIGMENT

ULTRA-MARINE

Made of: Lapis lazuli, a precious stone mined in Afghanistan
Used by: European artists
Great for: Splurging on paint supplies. During the Renaissance, ultramarine was as valuable as gold. Painters often saved it for the most important part of the scene.

5 THINGS TO KNOW ABOUT

THE INDIGO' LAVA OF INDONESIA

On the island of Java, the Kawah Ijen volcano spits out Technicolor lava that would give your Day-Glo crayons an inferiority complex.

1. Don't be fooled! The lava isn't actually indigo. The colorful flames erupt as sulfuric gases combust, emerging from the earth at temperatures up to 1,120°F.

2. Marvel at the flames, but don't point at them. Javanese tradition says that pointing at a cloud of fire invites it to come toward you.

3. Liquid sulfur flows down Kawah Ijen into one of the world's largest acid lakes, which boasts a pH of 0.5—more corrosive than battery acid.

4. Ceramic pipes installed over vents allow locals to mine the sulfur. The gas streams down the mountain, condenses into liquid, and congeals into yellow chunks used to make insecticide and batteries.

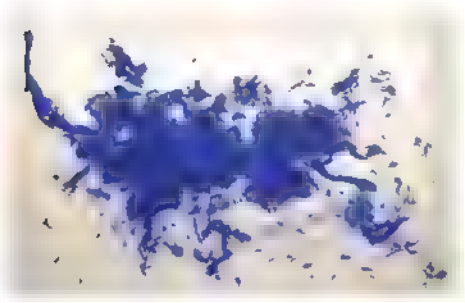
5. Photographing Kawah Ijen is a bad idea. When Olivier Grunewald tried in 2010, he lost one camera, and two lenses corroded because of the acid. "The feeling is like being on another planet," he told Boston.com.
—MEG ROBBINS

[1] We're aware that blue comes before indigo on the visible light spectrum, but this photograph was too cool! We had to give it a full page.

ALAMY

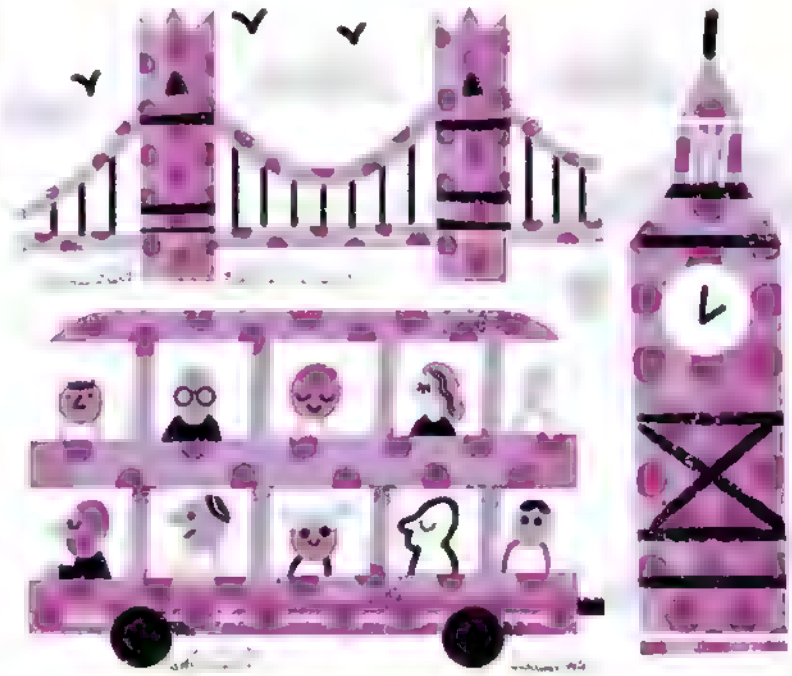
FAST FACT

Hirple is one of two[1] words that rhymes with *purple*. It means "to limp awkwardly."



BLUES MASTER

In March, a nanotechnology startup created the world's "blackest black" using light-absorbing carbon nanotubes. It wasn't the first superlative shade. In 1960, minimalist artist Yves Klein created the world's "bluest blue"—International Klein Blue. He unveiled it by displaying paint-soaked sponges and hiring nude women covered in paint to sprawl on canvases.



NAMING BLUETOOTH

Tenth-century Scandinavians were crazy for nicknames. They took monikers like Olaf the Witch Breaker, Þorfinnr the Splitter of Skulls, and Eysteinn Foul-Fart (really). But few Nordic nicknames have had the lasting cultural cachet as that of King Harald Gormsson I of Denmark. His was adopted by a wireless technology—Bluetooth. (Fun fact: King Bluetooth was deposed by Sweyn Forkbeard. *Forkbeard!*)

GET TO KNOW A PIGMENT

TYRIAN PURPLE

Made of: Thousands of Mediterranean *Bolinus brandaris* snails
Used by: Ancient Phoenicians
Great for: Showing who's boss. The dye took so much labor, only the rich wore it. It was also used as ink on documents, such as Byzantine codices.

Purple Fever

The time mauve was the new black

BY **REGAN HOFMANN**

FASHION REALLY USED TO STINK. Before the 19th century, fabric dyes were derived from plants and insects and often made clothes smell bad. Worse still, they were expensive and prone to fading. And purple was the worst of the bunch: To dye a single yard of fabric, you had to crush thousands of sea snails. That changed in 1856 when William Henry Perkin, an 18-year-old student at the Royal College of Chemistry in London, was issued a challenge by one of his professors.

The goal? Make synthetic quinine, the malaria drug derived from the bark of the cinchona tree. Perkin saw promise in coal tar, a gloopy, toxic by-product of the Industrial Revolution. After one failed tar experiment involving ethanol extraction, Perkin noticed his rags were stained a "strangely beautiful" purple. He named it mauve, for the French mallow flower, and quit school to start a dye factory.

Queen Victoria liked the shade, and by 1859, everybody was wearing purple. *Punch* magazine declared London had come down with the "mauve measles," while *All the Year Round* magazine wrote, "We shall soon have purple buses and purple houses." Thankfully, rival chemists used Perkin's technique to develop other synthetic dyes, and by 1906 there were more than 2,000 hues available. Color us happy!

ILLUSTRATIONS BY ANDY J. MILLER/ALAMY (K.F.N.)

[1]The other is *curple*, meaning "a horse's behind."

THE ALBUQUERQUE
INTERNATIONAL
BALLOON FIESTA
OCTOBER 1–9, 2016
LOCATION: Balloon Fiesta Park,
Albuquerque,
New Mexico, U.S.
LAUNCH FIELD: 80 acres
BALLOONS: 700

THE BEST PLACE IN THE WORLD TO ...

Get Some Air

A single hot air balloon on a clear day is a thing to behold. But hundreds of balloons dominating the skyline at once? That's the kind of splendor you'll find only at the Albuquerque International Balloon Fiesta, the largest hot air balloon festival in the world. Started in 1972 by the first guy to own a hot air balloon in New Mexico, the Fiesta doubled as a birthday celebration for a local radio station and featured just 13 balloons launched from a mall parking lot. Today, it lasts more than a week, involves 700 balloons, and includes piloting competitions, special-shaped balloons, and the "mass ascension," which is exactly what it sounds like: all the festival's balloons rising in two waves to produce one of America's loftiest visual highs.

JUST SOME OF
THE AVAILAND
COMING
FLAVORS AT
IMPERIAL
WOODPECKER
WHICH INCLUDE
DREAMSICLE
MARDI GRAS KING
CAKE CHEESE
CREAM CHEESE
RED VELVET
WEDDING CAKE
AND HORCHATA

TRY THIS!

THE NEW ORLEANS SNO-BALL

The regal, icy sweet treat from the South is the best of its class.

BY **FOSTER KAMER**
PHOTOGRAPHY BY **EDMUND D. FOUNTAIN**

Whatever you do, don't call this thing a "snow cone." Don't call it "shaved ice" either. While it may look like these other frosty treats, the New Orleans sno-ball is in a league of its own.

There are a few features that distinguish a New Orleans sno-ball from its sweet, icy brethren. First, the construction materials: Whereas snow cones are made of tiny, tightly packed bits of tooth-traumatizing crushed ice, the sno-ball is made of plush pillows of ice that's been finely shaved into snow. The second is all about infrastructure: New Orleans sno-balls should be packed tightly, but not so densely that the syrup can't permeate the entire treat. Third, the New Orleans sno-ball should come from the Crescent City. At the very least, if it isn't prepared by a resident of New Orleans (like those you see here, from NOLA's Imperial Woodpecker Sno-Balls), it should be prepared using a SnoWizard, the motorized ice shaver created by New Orleans native George Ortolano in 1936. (There are a few other acceptable ice-shaving machines; all originated in the South.)

Finally, it should be served in a plethora of flavor options, ideally using only cane syrup and natural flavorings (oils and extracts). The real deal is served with spoon and straw—all the better for the cold, sugary slurping of The Big Easy's best summer treat.

GO THERE! Imperial Woodpecker Sno-Balls, 3511 Magazine Street and Riverwalk at Spanish Plaza, New Orleans

THE TERM *BAND-AID* IS A TRADEMARK OF JOHNSON & JOHNSON. THE OTHER GUYS? THEY'RE "ADHESIVE BANDAGES."

THE LITTLE THINGS

The Band-Aid

One of the most recognizable designs in the world is one of the most useful, and one of the oldest, too. Here's how it stuck around.

BY **JIAN DELEON**

PHOTOGRAPHY BY **ROB CULPEPPER**

2200 BCE
A Sumerian clay tablet, one of the oldest medical manuscripts ever found, describes the three healing gestures: washing wounds, making plasters, and bandaging wounds. Plasters are made from mud or clay, plants, and oil, which prevents dressings from sticking to wounds and may fight bacteria.

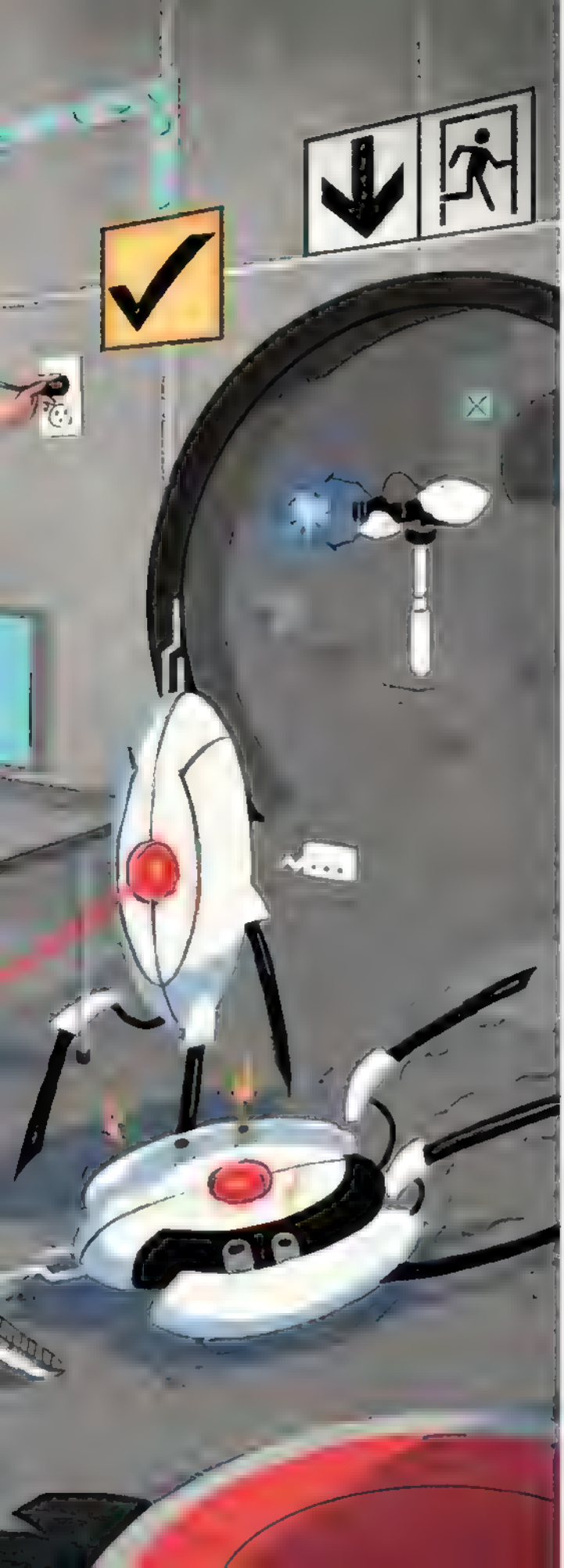
1500 BCE
In ancient Egypt, honey is used as an antimicrobial barrier and is applied to sores, burns, wounds, and abscesses. Egyptians believe protecting the wound this way prevents them from being possessed by spirits. They are among the first to use adhesive bandages. Animal fat and lint make for other protective covers.

400 BCE
Hippocrates, the father of Western medicine, prescribes treating ulcers with wine and covering them with fig leaves.

19th century
The advent of antiseptics introduces a medical revolution, stemming infections and decreasing mortality. Surgery becomes a legitimate branch of medicine.

THE FIRST BAND-AIDS WERE 3 INCHES WIDE, 18 INCHES LONG, HANDMADE, AND A FLOP. IN THE FIRST YEAR AVAILABLE, THEY GENERATED ONLY $3,000 IN SALES.

BAND-AID
BAND-AID
BAND-AID



LEFT BRAIN | RIGHT BRAIN

101 MASTERPIECES

The Great Escape

How a video game broke all the rules and made art—out of physics

BY **CHRIS SUELLENTROP**
ILLUSTRATION BY **BYRON EGGENSCHWILER**

IN 2005, SEVEN STUDENTS at DigiPen Institute of Technology—a for-profit university that teaches video game design—dutifully showed up at their school's annual career expo to show off their senior project. Their expectations were reasonably low.

Sure, they knew a few big-shot game designers would attend. DigiPen, after all, was located in Redmond, Washington, home to Microsoft and Nintendo, and representatives would likely be there. But the students certainly didn't expect folks from Valve—the company behind *Half-Life*—to stop by their booth, play their game, *Narbacular Drop*, then leave business cards.

When the students called Valve hoping to get feedback from experts, they were shocked by the response. A few weeks later, they found themselves in a corporate meeting room. "We took the game there and we were thinking, 'Oh, we're going to show it to two or three people,'" Kim Swift, one of the DigiPen seven, told *Forbes*. But people kept piling into the room: 20 to 30 of Valve's top programmers, artists, and executives—including Gabe Newell, Valve's legendary co-founder. It was like having Steven Spielberg show up to a screening of your student film.

Less than 15 minutes into the *Narbacular Drop*

demonstration, Newell stopped the proceedings. He had a question for the twenty-somethings. "So, what're you doing after graduation?"

***NARBACULAR DROP* WAS A FIRST-PERSON** shooter: The player sees the world through the eyes of a weapon-wielding protagonist. For decades, the object of first-person shooter games hasn't really changed: to shoot something or kill someone. But *Narbacular Drop* was different. Instead of firing holes into people, the character could fire holes into the fabric of space-time. So, for instance, you could create a hole in the floor and a second hole in the wall, and a portal—a wormhole connecting the two targets—would open up. Step through, and you would essentially teleport.

That wasn't the only strange part. The game's main character, Princess No-Knees, couldn't jump. She was trapped in a dungeon, and she needed to use portals to escape. The game wasn't about winning battles or running up body counts. It was about solving puzzles. It was also short, more of a demonstration of the robust potential of portals—what game designers call a "mechanic"—than an actual game. While the concept wasn't wholly new, *Narbacular Drop* was the first to make portals the centerpiece of the game play.

Newell loved it, and was determined to keep the students together and working on it. "Unless somebody did something, this team was going to break up, right?" he told the *Seattle Times*. "It's sort of like, you go and listen to the Beatles for the first time in Hamburg, Germany, and they say, 'Oh, yeah, now we have to go to our jobs and be plumbers and electricians and stuff like that.' You go, 'Oh my God, you guys have to stick together, you can't all go in separate directions.'"

So Newell offered them jobs on the spot—all seven of them. The students walked outside, dazed. "We just kind of stood in a circle and stared into space," Swift says. "None of us could actually form words for a while." Valve tasked the DigiPen seven with turning their college project into a full-fledged video game. They planned to work for six months and release a small, downloadable game—but when the deadline came, Valve told them to keep working.

It was typical of Valve. The company's design process, referred to as the Cabal, combines elements widely regarded as contrary to creativity, innovation, and timeliness. Game design is assigned to a collective, rather than an auteur-like designer. (For *Portal*, four programmers, three artists, and one writer made decisions as a unit.) There are no bosses. Employees can choose their own projects. In fact, all the desks have wheels so workers can push their work space around to whatever group they'd like to join.

The *Portal* team used that extra time to build a better narrative. In many video games, the game play (what the player is doing) diverges wildly from the storytelling (what the player is being told is happening). The *Portal* team avoided that. They pitched the game to a group of writers, and Erik Wolpaw, a staff writer experienced with creating unconventional games—*Alien vs. Child Predator*, for example—signed on. Swift and Wolpaw met each morning

between 6 a.m. and 7 a.m. to review the previous day's work, and within two to five days, a new level—and part of the story—would be ready for testing.

At Valve, a work in progress is regularly put into a player's hands. *Portal* was played, start to finish, each week during its development by a player who had never touched it before. The design team watched and took notes, but they were prohibited from offering hints. Even the plot and humor were tested.

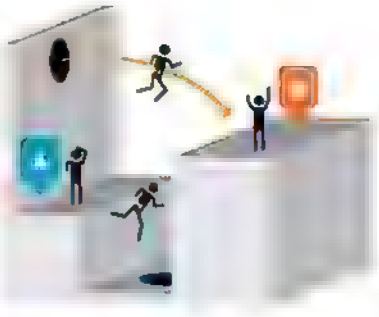
"When you're working on some sort of creative project, your natural inclination is to not want to show it to anyone until it's in a state that you think you can be proud of," Wolpaw told Gamasutra, a website for game designers. "But at Valve, we're putting you out there and you're going to fail, fail, fail. You'll have little successes and little failures, and until you get used to the process, it's a little bit scary and painful. But it's really worth it."

After six more months, the team was ready to show off their product. Then Valve delivered more unexpected news: They needed to put in another year of work.

THIS WAS A HUGE VOTE of confidence. Hundreds of millions of dollars are routinely spent making games every year. In 2015, the industry raked in more than $23 billion in the United States alone. The fact that a studio was putting a fraction of those resources into an inexperienced team's project wasn't exactly a common occurrence.

But Valve clearly had something special on their hands: a unique game mechanic and a story dripping with dark, intelligent humor.

Imagine waking up in an abandoned, futuristic science lab. You are alone. You are trapped. You're given a gun that's like something Wile E. Coyote might have ordered out of the Acme catalog. It shoots portals. The only way out of the lab is to move from room to room, solving puzzles. For example, you're in a room, and there's an



PORTAL PHYSICS
In *Portal*, you have to figure out how to get from Point A to Point B. First, you place your portals strategically with a gun. You jump into the blue wormhole and your momentum spits you out of the orange one—and that's how you make it across! In other words, as GLaDOS says, "speedy thing goes in, speedy thing comes out."

exit on the other side, but a pit in the floor blocks the exit. To escape, you have to shoot a portal across the chasm and another on a nearby wall. A wormhole develops. You walk through and, like magic, you're transported to the other side.

You move into a new room. A wisecracking, all-seeing robot named GLaDOS watches your every move and drops hints. Soon, the puzzles become more difficult and dangerous. Spiked panels emerge from walls. Lasers try to sear you. GLaDOS goes from an ambivalent help-desk robot to a mocking, malevolent force. She has you trapped, and you must use the spatial reasoning skills you've developed to destroy her.

In October 2007, *Portal* was released. Critics raved. Usually, the object of a first-person shooter is to defeat something, often violently. That violence may be comic (like jumping on turtle shells), absurd (like throwing fireballs), or realistic (like storming a military compound with shotguns and sniper rifles). But for much of *Portal*, the object was to simply get from one room to another.

Notably, the game's only two characters were female (even if one was a robot and the other didn't speak). And it was short: 20 levels. You could finish it while someone else watched *The Godfather Part II*. In a medium known for games designed to hook you on an endless loop of play, *Portal* left its players wanting more. "The better we tuned our game, the shorter the game got," Swift said.

"It's generally accepted that *Portal* is maybe the high-water mark of storytelling in games," Frank Lantz, director of New York University's Game Center, said at a lecture. "The story that's happening is about games and how weird they are. Why are we jumping through hoops? Why are we banging our heads on puzzles? Why are we trapped in this weird testing complex? Which is what a game is." In effect, *Portal* was a meta-commentary on the nature of games.

Accolades from industry colleagues followed. In February 2008, the *Portal* team sat at the Game Developers Choice Awards in San Francisco, the gaming equivalent of the Academy Awards. "I remember thinking, 'We're not going to win anything,'" Swift said. "We're just this little team that threw together this small, very strange game with a ton of inside jokes and strange memes."

They won Innovation of the Year. And Game of the Year. In fact, more than 30 publications would call *Portal* the game of the year.

ARE VIDEO GAMES ART? MoMA thinks so. In 2012, the museum added 14 video game titles to its permanent Architecture and Design collection. Among them? Classics like *Pac-Man*, *Tetris*, and, yes: *Portal*. A well-designed video game, the museum explained, is like a chair designed by Frank Lloyd Wright: "The programming language takes the place of the wood or plastics, and the quality of the interaction translates in the digital world what the synthesis of form and function represent in the physical one."

It helps that *Portal* is now widely regarded as one of the finest works in the half-century history of interactive entertainment. Rather than a violent, special effects–laden blockbuster, it's a quietly brilliant blend of narrative and spatial reasoning puzzles that invokes physics, geometry, and logic. It proved video games could transcend their reputation as distractions and be cerebral, meaningful, and rewarding.

Portal also reaches beyond gamers. "Perhaps inadvertently, [it] makes for a hell of an educational game—because you're constantly mentally calculating the vectors of force and direction you'll generate by falling through and out of strategically placed holes," wrote Clive Thompson in *Wired*. "Physics teachers could have an absolute field day with this thing."

In fact, they have. When *Portal* was released, Valve began receiving emails from math and science teachers who praised it as an intuitive way to educate students about physics concepts like inertia and momentum. When Valve agreed to make a sequel, they assigned two members of the original team to explore the next game's education potential. They even started a schools initiative called Teach With Portals, a collection of lesson plans that integrate the game into classrooms. *The New York Times* said the sequel "wrings more fun out of physics than all of the shoot-'em-ups in the world."

IN EFFECT, PORTAL WAS A META-COMMENTARY ON THE NATURE OF GAMES.

As for the Beatles of video games, they broke up after their masterpiece. Swift left Valve after five years. She's now a designer for the secretive Amazon Game Studios, working on an unannounced project. She's an industry veteran, a celebrity who delivers keynote addresses at fan conventions—yet she's also only 32.

"I guess I just wanted to try something different," she says when asked why she left Valve. "I had wanted to be a game developer since I was 10. To know that I had basically accomplished my dreams in such a short period of time was crazy." ❀

GRAMMAR TIME!

HOW ENGLISH WAS MADE

One language's long journey from humble to honorificabilitudinitatibus

BY ARIKA OKRENT

LONG AGO, English was considered a barbarian's tongue. It was fine for the workshop and tavern, but unfit for philosophy, art, and matters of the spirit. Even in England, the Catholic church and universities used Latin, while French was the language of Britain's royal court and legal system.

But with the 15th- and 16th-century Renaissance, a surge of scholarship brought advances to all areas of thought. Scholars realized that they could use the printing press with everyday languages—even the debased English—to spread ideas. An audacious project was born: Translators would make Plutarch, Cicero, and ancient texts accessible for this uncultured lot.

Trouble was, English didn't have the words they needed. One scholar was frustrated that "there ys many wordes in Latyn that we haue no propre englyssh accordynge therto." Another complained that, compared with Greek, "our grosse tongue is a rude and a barren tong." To fill in the gaps, translators started to borrow and create words based on Latin and Greek. For example, there was no English word *animal*. The closest was *beast*, but that excluded humans. *Animal*, in Latin, had a broader meaning. It meant any being with anima—breath, soul, feeling. So they used *animal* in their translations as if it were an English word. And pretty soon, it was.

A huge number of words we use to *describe* and *explain* (including *describe* and *explain*) come from this period of *vocabulary innovation* (yes, those too). The list *includes* (yep), from just the first half of the *alphabet* (you bet): *absurd, adult, ambiguous, articulate, catastrophe, confide, deduce, dilemma, education, enigma, exact, expect, explain, frequent, gradual, hero, illustrate, imitate, irony, lament, map, myriad.*

How wonderful this was for the barbarous language! But as the century progressed, some people began to object. While *animal* was useful, something like *adminiculation*, for "the act of giving help," seemed unnecessary and not much shorter than the phrase it was supposed to simplify. Other short-lived words scholars threw around included *addubitation* (the act of questioning oneself), *circumplicate* (to wrap around), *exsufflation* (the act of blowing

out), *impotionate* (poisoned), and *ingent* (immense).

It got so bad that these coinages earned a nickname: inkhorn terms, after portable ink containers, originally made from animal horn, that scholars hung from their belts. An inkhorn term was deliberately difficult, crafted to reflect well on the author rather than to make things clear for the reader. When Shakespeare wanted to mock this pretentiousness in *Love's Labour's Lost*, he created the word *honorificabilitudinitatibus*, a laughably inkhorn way of saying "the state of being able to achieve honors."

NEW WORDS LIKE *ANIMAL* WERE USEFUL, BUT *ADMINICULATION* SEEMED UNNECESSARY.

Inkhorn opponents worried if we started using *adminiculate* instead of native words like *help*, there may come a time when all English words would be replaced. So they started a movement to make English English again. John Cheke, a scholar who thought "our own tung should be written cleane and pure," tried it in his circa 1550 translation of St. Matthew's Gospel, using translations formed from Old English roots instead of Latin and Greek. For example, in place of *lunatic*, which comes from *luna* for moon, he used *moond*. He also created *biwordes* (parables), *freschman* (proselyte), and *gainrising* (resurrection).

Another anti-inkhorn scholar, Ralph Lever, tried to recast the principles of logic in English. His 1573 book, *The Art of Reason, Rightly Termed Witcraft*, replaced terms like *contradict*, *conclusion*, *definition*, *proposition*, *affirmation*, *negation*, *subject*, and *predicate* with substitutes based on English roots: *gainsay*, *endsay*, *saywhat*, *shewsay*, *yeasay*, *naysay*, *foreset*, and *backset*. It didn't really work, but it makes for fun reading today. Here's one rule from the book: "Gainsaying shewsays are two shewsays, the one a yeasay, and the other a naysay, changing neither foreset, backset, nor verbe." (Translation: Contradictory propositions are two propositions, the one an affirmation and the other a negation, with the same subject, predicate, and verb.)

In the end, English remained English even though it rejected *moond* and *shewsay* and absorbed plenty of inkhorn terms. *Celebrate* and *confidence* once sounded snooty, but we got used to them. We rejected *inexcogitable*, but replaced it with the no-less-inkhorn *inconceivable*. We didn't like *exolete* but welcomed *obsolete*. The English purists didn't need to worry after all. The ability to try on words and accept or reject them, whether they are Latin or not, is a sign of a language being robustly alive (unlike, say, Latin). The success or failure of a word has less to do with its origin than with whether we find it useful, or, sometimes more simply, whether we like it. On that grounds, maybe *honorificabilitudinitatibus* is due for a gainrising. ❀

ILLUSTRATION BY JOHN PATRICK THOMAS

UNDER THE KNIFE

For the father-son Renaissance Faire duo Stewart & Arnold, throwing barbs is all in the family.

BY **JEFF RUBIN**[1]

You're father and son. That's not part of the act?
ARNOLD: That's not part of the act at all. Thirty-seven years ago on Labor Day, my son was born, and I caught him. ["Stewart & Arnold" are the stage names of son Leif and his father, Chris.]

Were you throwing knives before he was born?
ARNOLD: Oh, yeah. My grandfather took me to Ringling Brothers and Barnum and Bailey when I was 4 or 5, and I saw a gentleman named Paul LaCross[2] doing his knife throwing. Shortly after that, I got in trouble for throwing the family's steak knives at an archery target. My son has been working with me for 30 years now.
STEWART: When I was 7 years old, I decided I wanted to be part of the show. He stood me up against the board, threw knives at me, and said, "Now that you know what it feels like to be there, I'm going to start teaching you."

How experienced should you be before you start throwing knives at people?
ARNOLD: I was willing to throw at humans when I was about 12 or 13 because I knew darn well I wasn't going to hit them. But it wasn't until I was in my mid-20s that I found somebody who I convinced: "Just stand there, it'll be fun."
STEWART: I had been throwing for seven years and was approaching my 14th birthday. We were working at the Texas Renaissance Festival. I had the skills to throw knives at people, but I didn't have the confidence. Dad looked at me, and he said, "Well, it's time." After that, there was no going back.

I saw you guys at the New York Renaissance Faire.
STEWART: We also do nightclubs, corporate events, parties. Pretty much anybody that'll pay us.

You can't just go to Walmart and buy your knives, right?
ARNOLD: The knives we use were made by my dad, who was a tool and die manufacturer. We like to have them large enough that they can be seen from the back of the house, or the back rows of the audience. We have two different sets, a small set for throwing at each other and a larger set for throwing at an audience member during the finale. You can throw them equally as well from the blade or the handle. They were fashioned after the same type of knife that Paul LaCross, the guy I saw when I was a kid, used.

Take me through a throw. If you're outdoors, do you have to factor in the wind?
ARNOLD: We have worked on stages where we put a little wind sock next to the target board to determine when it would be safe to throw the knife. One year, we scoped out Norman, Oklahoma. They have a small, two-day Renaissance festival every year. You know that song where the wind comes sweeping down the plain? They didn't just write that because it sounded good. We concluded that we were never going to work in Norman,

"It doesn't matter how you do it, as long as you do it the same way every time," says Stewart, right.

Oklahoma. In Texas at the Scarborough Festival in the springtime, you get a day where the wind changes from northwest to the southeast, and it blows across the stage. When I throw the knife, it hits the board about two to three inches west of where I wanted it to go. It makes for an exciting show.

Anything else going through your mind before you release?
STEWART: I try to get as Zen as possible. There's always somebody in the audience who thinks making a sudden noise in the middle of a throw is a good idea. The only two things that exist when I'm throwing are my arm and the target.
ARNOLD: I can't tell you how many times in the middle of a throw, somebody will just yell. When I was just doing a juggling show, there were always little conversations going on. But in knife throwing, it gets to a point where the audience is completely silent. It's a wonderful feeling to know that there are 400, 500 people, and every one of them is paying attention to exactly what you're going to do next.

Do you still have to practice?
STEWART: I practice about three times a week about an hour at a time just to keep my arm loose.
ARNOLD: I like to do it six days a week. I usually take Mondays off. Monday we call "non-day."

You have been doing this for a long time. Have you seen Renaissance Faires evolve over the years?
ARNOLD: They've started being kinder and gentler to the performers. It used to be, here's a campground. It's gone from that to, well, we'll give you a really nice living space that is insulated and has running water.

You guys have a funny act onstage. How long did that take to develop?
STEWART: It's in constant development. Every time we think of something new, we give it a try and see how it works. Originally, our show was mostly juggling, and the grand finale was a little bit of knife throwing. Over the years, we developed it into a knife-throwing show with comedy in it. We both possess numerous skills. When I started learning how to throw knives, my father also taught me how to walk on stilts, tightrope, unicycling, juggling, and sword swallowing.

What are the cultural roots of knife throwing?
ARNOLD: Cowboy shows, Wild West shows. If you go online and search the Texas Archive of the Moving Image, there was a woman who threw knives at her 5-year-old daughter in 1950-something. They have it on film. There's always been somebody out there throwing knives.

What is the first thing you need to know about knife throwing?
STEWART: Practice, and when you're done practicing, practice a little more, and after that, practice some more. Once you get the muscle memory and learn how to do it properly, it doesn't matter how you do it, as long as you do it the same way every time. We do an overhand throw, which is the easiest throw; it's what we call a show throw. We want it to look flashy, and we want everybody in the audience to be able to see that it's flying through the air.

Is this safe?
ARNOLD: I've never accidentally hit anyone with a knife. ®

---

[1] Host of *The Jeff Rubin Jeff Rubin Show* (jeffrubin.jeffrubinshow.com); wears a pirate shirt and tosses a Nerf knife on weekends.
[2] The legendary American knife thrower could slice the ash from his wife's cigarette at 20 paces with a lumberjack ax.

MENTAL_FLOSS + DONORSCHOOSE.ORG PRESENT

Fun
Thes
Teac

d se hers

THE 2016 PLATYPUS AWARDS

INNOVATIONS IN TEACHING

Our annual awards, named for nature's most unique animal, go to innovative, interdisciplinary geniuses. This year, we asked *you* to nominate heroic teachers who make timeless subjects feel exciting and new. Now we're asking for your help again. We've partnered with the nonprofit Donors Choose to help our winning teachers crowdfund supplies for their classrooms **Go to donorschoose.org/mental-floss to help bring their projects to life.**

INTERVIEWS BY **CAMILLE DODERO, TIM MURPHY, ALEXANDRA OSSOLA,** AND **MEG ROBBINS**

Empathy Through Opera

An avid performing artist, social studies teacher Pren Woods has a way of making the past sing

Pren Woods

School: Alston Middle School, Summerville, SC
Grade: 7
Subject: Social Studies

How do you use the performing arts to teach history? For one project, I teach Mozart's *Marriage of Figaro*. We learn opera terms and study arias, and at the same time, students are reading *The Outsiders*. After looking at the arias, we relate the pieces to someone we're studying in history. Who in history would sing this aria? They have to justify their decision, and they get excited and start debating each other. Then, we talk about *The Outsiders*. What would Ponyboy be singing? What's his aria? Now defend your argument.

What's the value of getting into history through this side door? When I tell people I'm a history teacher, they say, "Ugh! My worst subject." And I say, "Let me guess. You answered questions at the back of the chapter, you defined words, and you memorized dates." I want class to be interactive. I have a performing arts background, so I bring that into my history class; I play the piano, sing, dance.

AGATA NOWICKA (PORTRAITS); CHRISTINE SENGABOVE)

Are the students performing too? We dress up, sing, choreograph videos. But we also write papers and have debates. It's fun—but rigorous fun. Let's say we're studying Marie Antoinette. I want students to create a song about it, or a haiku about it, or move in a way that—without using words—shows us what was happening. The point is to get them engaged. Because once they're engaged, they'll remember the facts, and that helps them do well on state tests. But my primary goal is historical empathy. Yes, they're learning a bunch of facts, but I bring it back to the present. What choices could these people have made differently? Could they have fostered more understanding and tolerance? At the end of the day, my job is to use history to make sure my students are going out as kinder, more productive people.

What's the biggest change you've seen? Kids go home and talk about history with their families. I appreciate that, because in middle school, kids begin to disappear from their parents. My goal is that they use history to change the present. They're 11 and 12, and their parents tell me, "My kids talk to me about things, ask me my opinion, and share what they're learning."

AMY MARTIN (RIGHT)

Creative Business

Todd LaVogue built a career as a corporate trainer, but always felt he should be teaching. When he made the switch, he found a perfect fit leading a class called Innovation, in which students develop creative problem-solving and critical thinking abilities—"the skill set that will actually get people jobs," he says.

Part of the class involves LaVogue teaching students how to pitch a business, then letting them loose at a local shark tank. They've developed thriving companies and nonprofits, including Kayla Cares 4 Kids, which distributes DVDs and books to children's hospitals around the country.

When LaVogue tried to teach homeless students and kids in gangs about ancient civilizations, it flopped. "Why should they care?" he says. The key was to make it relevant. Using a $40 video camera and resources from companies that would otherwise be thrown away, the class turned into a TV studio. Ancient Egypt came alive in a *Today*-type show called *Good Morning Egypt*, with segments like "God Gossip," which detailed activities of Egyptian deities. The show had dual value: "In business you need to create," LaVogue says. "My students were consuming content but not creating it." He's changing that.

Todd LaVogue

School: The Conservatory School, North Palm Beach, FL
Grades: K-8
Subject: Business and Entrepreneurship

Where School Is In—but Class Is Outside

Getting students passionate about nature and volunteerism may be on par with, say, getting students passionate about homework. But Wrayna Fairchild thinks the outdoors can be used to fire students up about public service. The Honolulu-based STEM (science, technology, engineering, and math) teacher takes her classes outside into the natural splendor of Hawaii, not just to learn and be inspired by the environment, but to give back to and protect it as well.

Wrayna Fairchild

School: Manoa School, Honolulu, HI
Grades: K-2
Subject: STEM

Fairchild supersizes the traditional field trip—think night snorkeling with manta rays. The science sleepovers include exploring the waters for plankton and gathering it for study under a microscope.

One trip to a cloud forest was spent conducting a series of scientific inquiries with local park rangers. They took the results back to the classroom and, after winning a grant, they turned those inquiries into self-published hardcover books. The kids even got a book release party.

SOLVING HISTORY'S MYSTERIES

A Culture of Questions

Valerie Ziegler

School: Abraham Lincoln High School, San Francisco
Grades: 10-11
Subject: History

Stanford researchers brought the "Read Like a Historian" curriculum to my classroom—I was one of the test classes—and it completely changed how I teach. The curriculum is all about interrogating primary sources. We're not just reading documents to read them. We're reading them to answer questions.

I start with a primary source document about myself, about when I went to college. I give the perspective of my dad, my sisters, myself, and a photo. Everybody has a different story, and students say, "You're not telling the same story your dad or sister told!" We discuss why that is. It's not a historical document, but we're doing what historians do: reading closely, asking questions, identifying bias, identify-

AGATA NOWICKA (PORTRAIT); AMY MARTIN (ABOVE)

FIND
MORE
FREE
MAGAZINES

HTTP://SOEK.IN

During a marine biology unit, a local coral reef protection agency called Reef Teach trained kids to be ambassadors for the agency. The students received training on living monitoring coral reef protection on Hawai'i's beaches and spent time conducting water quality monitoring tests up and down the coast. Afterward, the group compared the data they'd gathered.

Students gave input on an environmental preservation bill to the Hawaiian state house and senate, and afterward formed an environmental youth group. The youth group went on to launch a reusable bag collection drive—the bags were donated to local farmers' markets—and also hosted a large-scale beach cleanup on Kamilo Beach, one of the world's dirtiest beaches.

During Fairchild's Forces of Nature unit, guest speakers from the Pacific Tsunami Warning Center visited the classroom. The students reevaluated their school's levels of earthquake preparedness, then helped optimize it by studying data on earthquake kits and making sure all the school's kits, as well as those for individual students, were up to code. They also created public service earthquake and tsunami preparedness that were eventually aired on local TV.

ing the authors and what they bring to the table, and applying skills to find out what we can about what really happened.

As a historian, primary source reading can be frustrating because sometimes there is no right answer. For example, one question that comes up in my classes: "Was Lincoln a racist?" You look at these old documents, and you form an argument based on what you find. Another lesson is: "Did Pocahontas save John Smith's life?" Everybody has a point of reference for her—I show a Disney clip, and then we get into primary documents. At the end, the kids ask, "Well, did she?" I say "Well, I'm asking you." That starts a dialogue. How do we know what we know?

Another is: "Where did Rosa Parks sit on the bus?" That's exciting because there is an answer and it's not what most people think. [Parks sat in the middle, mixed-race section, not the front.] The process elevates historical thinking because we dig for facts. The kids think they're just trying to answer a question, but then they realize they can question, analyze, and test sources. Half the time, they don't even know they're doing it.

CARMEN SEGOVIA (RIGHT)

HOW TO CREATE CREATORS

All Hands on Deck

If you walk into my classroom, rarely are you going to see 25 students sitting in chairs at desks. I teach by having kids *do* something. Here in West Virginia, there are wind turbines on the mountains. The kids didn't understand how wind could generate electricity. They could read and talk about it, but they couldn't see it, so we constructed 2½-foot-tall model windmills that charged batteries through the energy created by the spinning blades. Thanks to a grant, we're putting up a wind turbine on our property. An engineer and a crew will work with my students so they can see, step by step, how it's built.

Gabrielle Rhodes

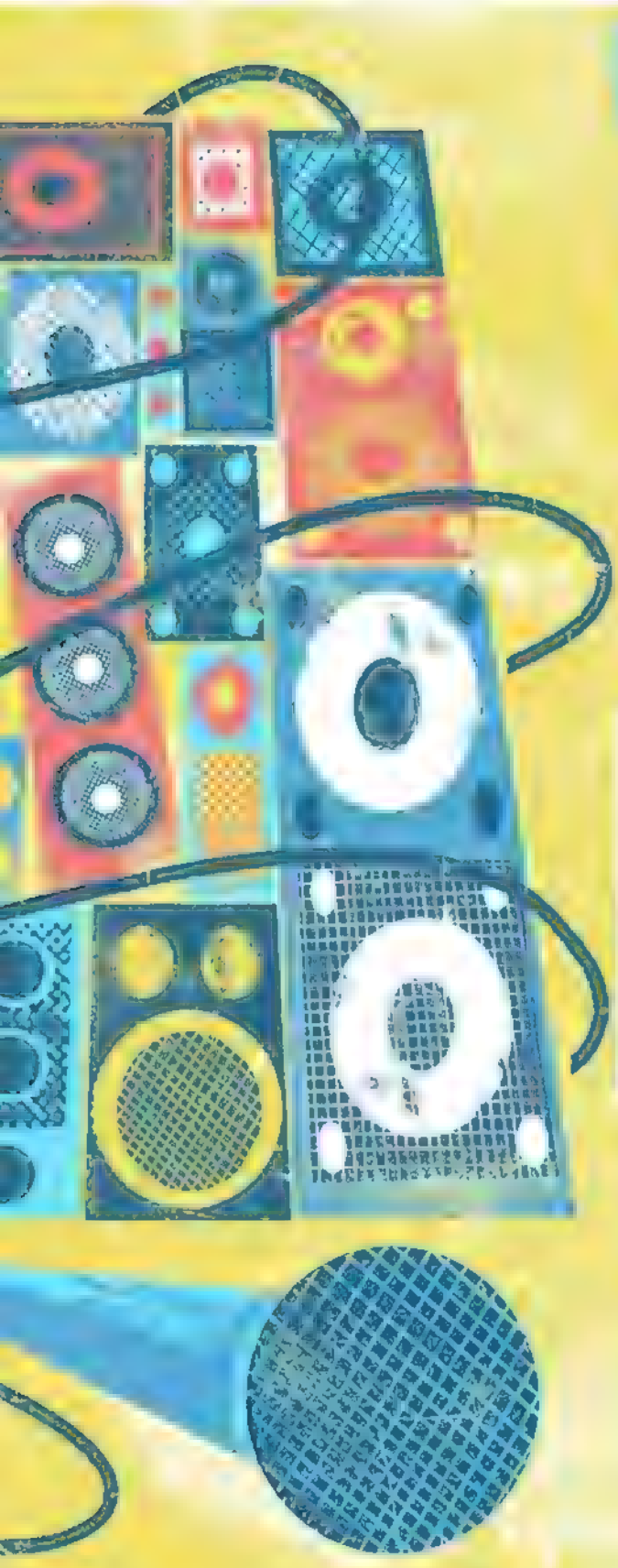
School: Union Elementary School, Buckhannon, WV
Grade: 3
Subjects: Math, Science, Social Studies

For another unit we studied the judicial system, and higher administration walked into the classroom with an outline of a body on the floor! We had to solve the "crime." A local judge agreed to let us have a whole trial, and he presided over it. A parent who was a lawyer helped us prepare the defense and prosecution.

Sometimes it feels like education can create robots rather than creators. I don't want my students running to people for answers. I want them thinking about the answers. They're 8. They're capable of thinking! So my classroom focuses on project-based learning. We don't use textbooks. Everything is hands-on. Students don't forget experiences—what they did with their hands, what they built. That's learning.

One reason I love projects is because students who struggle with tasks like reading can become leaders. For the windmill project, these kids worked well with their hands and could look at directions and put the windmills together faster than I could. And all of my gifted kids were saying, "Hey, can you come over and help me?" These students could step into the spotlight and become leaders. That's so important.

AGATA NOWICKA (PORTRAITS); CARMEN SEGOVIA (LEFT); CHRISTINE SEN (RIGHT)



Rhyming for a Reason

How spoken word artist Brian Mooney uses rap and slam poetry to help students tell their stories

How do you connect hip-hop with the classics? My freshmen read Toni Morrison's *The Bluest Eye*. It deals with racism, beauty standards, internalized oppression—big, heavy concepts. Then, last year, Kendrick Lamar released *To Pimp a Butterfly*. I noticed connections in nearly every song. So I used the album to reinforce ideas in Morrison's book. By using a medium they understood, students could see the issues raised by the book in a contemporary way. The lesson made its way to Lamar. He wound up coming to the school and helming an academic discussion about the implications of the kids' work.

Brian Mooney

School: High Tech High School, North Bergen, NJ
Grades: 9–10
Subject: English

What's the value here besides entertainment? Urban youth in America are often described as disengaged, unmotivated. The truth is that oftentimes we're failing them. They don't see themselves reflected in the curriculum. It's not relevant to them, it's disengaging, and then we wonder why they're not paying attention! I love how young people manipulate language in diverse, interesting ways. Whether it's rappers or MCs or this new generation of slam poets—it's relevant, and many young people are invested in it outside of school.

Don't many people find rap objectionable? It's a contemporary art form, but it's full of contradictions. It can be sexist and homophobic, and while that can be problematic, it allows us to interrogate those contradictions. As an English teacher, my responsibility is to help students become literate in the 21st century, to question the media that surrounds them. That's why hip-hop makes sense in the classroom.

How else does it help students? We encourage students to write and perform. And they do! They have the courage to write their stories and perform in a theater of 200 people. I hope that experience carries to other disciplines. A lot of students now see themselves as writers, as people with stories worth telling and hearing.

Making Math Fashionable

With a mind primed to solve puzzles, Trang Vu sees the opportunity to create them out of everyday material.

Math has a reputation of being dry, but you found a way around that. Geometry is my favorite. You can be creative with shapes, but there's a practical side too. So I developed this lesson that built in different concepts of geometry: What does a clothes designer need to know about mathematics to be able to creatively come up with a design?

How did your students go about answering that? I had the students construct a skirt made out of concentric circles, trying to figure out the most efficient way to measure, to lay out fabric so that the garment's weight is as light as possible. They also had to come up with a tool that would help a designer find the radius of a

Keith Lindsey

School: School for the Creative and Performing Arts, Lexington, KY
Grade: 5
Subjects: Social Studies and Language Arts

TEACHING THE YOUNG AND THE RESTLESS

Master of Disguise

I teach by acting. For the unit on explorers, I perform as Erik the Red. I grow a beard, wear a Norwegian helmet, and do the whole accent. The kids come in and stop dead at the doorway. They don't know what to make of me. Then I portray Buffalo Bill Cody and Crazy Horse. I explore the parallels between both men's lives—they both lost their children—and that helps me teach the kids irony. Acting allows me to explore these people in a greater depth. It gets the kids inspired.

I lived in Los Angeles for 12 years—was on *The Young and the Restless* and *General Hospital*. I paid the bills by doing commercials and some inner-city teaching, but then I moved to Kentucky to pursue horse racing. That was tough to

AGATA NOWICKA (PORTRAITS); CHRISTINE SEN TABUENA/ARMEN SEFLOVIA (RIGHT)

person's waist without doing any calculations. They had to create a tape measure that could wrap around a person, and that had to tell you right away what the radius is. The project was about trying to be creative, but you had to be accurate too.

How did the students respond? After doing a hands-on project like this, they see the need for mathematics—it's not just for college, it's relevant to their own lives. If you're working with exponential functions, you can look at the power of compound interest; I had a student write an article for a newspaper about the dangers of using credit cards. The fashion lesson takes a student from a concrete activity to more abstract ideas. And maybe there comes a day when we work on something so abstract that we can't have a hands-on experience, but by that point, the student is so interested in math that they don't need it.

Trang Vu

School: La Jolla High School, La Jolla, CA
Grades: 9-12
Subject: Math

How did you think up the fashion lesson? I was remodeling my house at the time, and I've always liked sewing. I do a lot of sewing at home; I do drapes for my own home windows and some upholstery. I like hands-on activity. It's therapeutic.

Sounds like you have a creative mind, so ... why math? I'm actually more a logical type. I like problem solving; I like puzzles. The feeling of being able to figure out a difficult math problem or something related to mathematics is inspiring—I like that kind of challenge. I'm from Vietnam, and when I came to the United States, math was the only language that spoke to me clearly. English wasn't my first language, and I struggled with that, but math came naturally for me. And when I was a student, math was more about memorizing formulas. I was good at memorizing and manipulating symbols, but I didn't see the relevance during middle school or high school. In college I was working as a tutor and had to reteach these ideas, and I didn't know how! That's when I had to dig deeper.

make a living at, so I made it a hobby.

I got divorced and was at a low point. I was being Mr. Mom to two young daughters and going to school at night to get my teaching degree. I was living out of a few boxes in a humble apartment when the parent of a former student called and told me about a job opening teaching fifth grade. I thought the interviewing process would give me something to focus on. I pretended it was an audition—and got the part.

At first, the principal at my former school thought I was showing off. But when she saw test scores improved, I turned her around. Now the kids can do research by doing first-person presentations as actors.

I combine performance and history because textbooks give kids a limited view. I want them to realize there's a wealth of information out there on whatever they're interested in. I don't want to be a "sage on the stage." I want them to take ownership of the material. Acting helps that. The word *enthusiasm* is derived from Greek, meaning "in the gods." I want my students to feel that divine spark.

GETTING IN FORMATION

Playing With Numbers

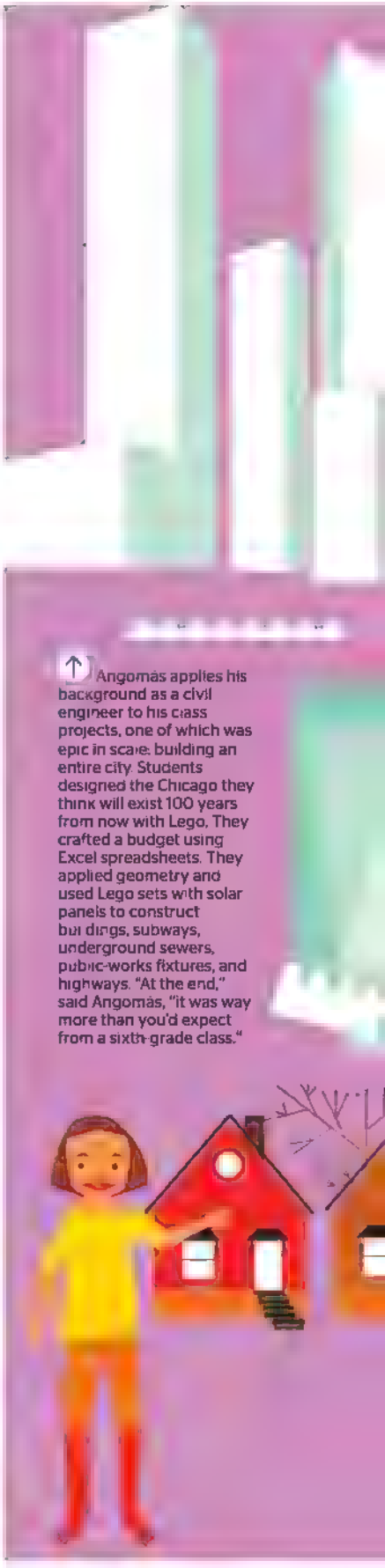
I had a student who said, "The only time math applies to me is when I buy something." I replied, "But at the mall, there's so much more to math than buying things!" She said, "Prove it." So we started the Mall Math Marathon. I teach consumer math—sales, discounts, unit rates, fixed commission—and then we go to the mall. The kids have missions to visit different stores and apply those lessons. Some stores get involved: We're using FitBits to explore concepts beyond sales where math can be used.

Valerie Camille Jones

School: Ron Clark Academy, Atlanta
Grades: 6–8
Subject: Math

I had a student who played pool with his dad, so we went to a pool hall. There are a lot of pool tricks, and I wanted my students to figure out the geometry behind them. We discovered how much force you needed, and we used protractors to find the best angles. I did a lesson at a laser tag room, where students had to figure out the correct angle to get through the laser tag room. I also partner with a company called Dimensionu that makes math video games. Parents emailed me asking, "My child says you gave them video games for homework. Is this educational?" They are!

I try to find ways to fight people's math anxieties. When I first started teaching, I worked at a performing arts school, and I had to integrate math with singing, dancing, and acting. Now I coach a step team, and we just worked on showing how rhythms and note values—half notes, quarter notes—can help you understand fractions, and how geometry is used in how you make formations. That works for cheerleading, for band, figuring out different shapes and diagonals when dealing with formations. That's the best thing about this subject. You can be anywhere and do just about anything, and find a way to relate it to math.



↑ Angomás applies his background as a civil engineer to his class projects, one of which was epic in scale: building an entire city. Students designed the Chicago they think will exist 100 years from now with Lego. They crafted a budget using Excel spreadsheets. They applied geometry and used Lego sets with solar panels to construct buildings, subways, underground sewers, public-works fixtures, and highways. "At the end," said Angomás, "it was way more than you'd expect from a sixth-grade class."

AGATA NOWICKA (PORTRAITS); CARMEN SEGOVIA (LEFT); AMY MARTIN (RIGHT)

Engineering the Future

Trained as a civil engineer, Gabriel Angomás stepped into a Chicago classroom during a teacher shortage in 1994 and never turned back. He's constantly developing his classroom craft, building upon years of invoking pop culture and various mediums (like documentary filmmaking) to lay waste to potential boredom. "I want my kids to be truly knowledgeable," says Angomás. "I want them to learn how to use the math and science we know from class, and also how to take the pain of other people and be empathetic to that. Maybe you're not curing cancer, but if you're bringing that to the world, you're making it a more knowledgeable place."

Angomás has taught fractions with cooking shows, and probability using the NCAA March Madness tournament. For another project, students filmed documentaries in their communities. They focused on infrastructure and architecture, and used their footage to study energy, traffic, pollution, and low-income housing. The project helped students investigate the way urban design, engineering, and infrastructure affect quality of life.

For one project, Angomás wanted to bring practical business principles into the class. "We started creating business plans for the kids. They created their own companies—lemonade stands, selling chocolate lollipops, and so on. But first they had to conduct market research. They had to graph out plans using Excel. At the end, they had to put a price point on it and try to sell their product. And of course all the profits went to them."

Gabriel Angomás
School: Inter-American Magnet School, Chicago
Grade: 6
Subject: Math

THE DEAN'S LIST

From 240 entries, we chose our 10 winners and these nine runners-up

Julie Ahern
School: Andrew Cooke Magnet Elementary School, Waukegan, IL
Grade: 2

Dawn Clevenger
School: Beebe Elementary School, Beebe, AK
Grade: 4

Danielle Guzman
School: Leschi Elementary, Seattle
Grade: Kindergarten

Matt Johnson
School: Boiling Springs Elementary, Boiling Springs, SC
Grade: 3

Dan Jones
School: Richland School of Academic Arts, Mansfield, OH
Grades: 7–8

Eliza Minnucci
School: Ottauquechee School, Quechee, VT
Grade: Kindergarten

Lyssa Sahadevan
School: East Side Elementary School, Marietta, GA
Grade: 1

James Walsh
School: Scott County High School, Georgetown, KY
Grades: 11–12

Jillian Young
School: Elwood Kindle Elementary School, Pitman, NJ
Grade: 5

CALIFORNIA'S THIRD-LARGEST CITY BY AREA IS AN URBAN-PLANNING DISASTER, A SPRAWL OF EMPTY GRIDS THAT ASPIRED TO BECOME AN AMERICAN MEGACITY—AND FAILED. BUT AS THE DESERT WORKS TO RECLAIM THE LAND, IT'S BECOME A MECCA OF ANOTHER KIND

BY **ROSECRANS BALDWIN**

IT WAS JUNE IN THE MOJAVE DESERT and the sun was blistering. The land around me was empty, scorched, and flat, dotted by brush and the occasional piece of wind-swept trash. Judging by the map, the intersection where I'd stopped was a busy crossroads between two major thruways. But when I shifted into park in the middle of the road, no one honked. No one looked at me funny. I hadn't seen another car in an hour at least.

It was probably the safest intersection in America to pull over and take a nap.

According to the map, I was surrounded by cul-de-sacs and neighborhoods. In reality, there was nothing but sand and more sand—and roads. Endless roads. Roads in all directions, marked by white fence posts and the occasional lonely pole. Some were paved. Some were dirt. Some had long ago been reclaimed by the encroaching sand.

California City, California, is the third-largest city by area in America's third-largest state, and most of it barely even qualifies as a ghost town—a ghost town needs people to have lived there first.

California City is a ghost grid.

That afternoon, it was 98 degrees. Bugged out by the isolation, I kept thinking about everything I didn't know how to fix if something went wrong with my car. I checked my phone in case I needed to call AAA: no reception. I shaded my eyes with my hand. In the near distance were two hulking wrecks, old cars like two relics of a previous era. The 14,000 or so people who do live in California City

were miles behind me, in a concentration of ranch homes and stores clustered around the main drag. Out here, the only evidence of life was a half-dozen RVs I'd spotted, circled like wagons, and two dirt bikes I saw cresting a hill.

A hundred yards away, I spotted a mini tornado kicking up sand, whirling straight toward me. Time to go. I jumped back in the car, shifted into drive, and hit the gas—and 30 seconds later, plunged the nose of my Honda Accord off the lip of a three-foot drop.

Who put a sand dune there?

THE HISTORY OF CALIFORNIA CITY is one of fever, fervor, and near-bust. Even today, it's a town of weird contrasts. Two hours north of Los Angeles, in the Antelope Valley, the town takes up 204 square miles of land. In California, going by total acreage, only L.A. and San Diego are bigger. But the city's population makes it one of the state's smaller towns.

Of course, the founding dream was much more grandiose. Nathan K. Mendelsohn, a Czech immigrant, taught sociology at Columbia University in the 1940s before he moved west with big ideas about developing communities in California. Mendelsohn was a visionary, a dreamer. Prior to California City, he worked with famed real estate developer M. Penn Phillips, who helped build California's Salton City—a resort community that was practically built out of nothing, only to collapse at the end of the '70s.

In 1958 Mendelsohn, working with investors, bought 82,000 acres of land in the desert to develop a metropolis. The idea was to build a community that would join the ranks of America's great cities, even outdo them. Mendelsohn and colleagues drew plans, cut roads. Streets were named after the country's best universities, its biggest car manufacturers: Stanford, Yale, Pontiac, Cadillac. He built a park in the center of town named Central Park, and even included a man-made lake. When it came time to fill it, he flew in water from New York's Upper West Side.

The radio jingle for the town said it all: "Buy a piece of the Golden State/You'll be sitting pretty when you come to California City." People could buy a vacant lot for $990. Three-bedroom homes went for less than $10,000. "There was a kind of buying hysteria up there," Carl Click, an optometrist, would later recall to the *Los Angeles Times*. Believing that California City would soon be bustling, many landowners paid for property hoping to get a big return on their investment in just a few years. Buses of people would arrive regularly to look around. Mendelsohn himself donated a small church and a city airport. He offered land to corporations for $1 an acre—if they would build a plant and provide jobs.

Cities are not often created out of nothing. Damascus, one of the world's oldest cities, had from the beginning an oasis to farm, a river to drink from. In the United States, the early 1700s saw a diminutive island called Manhattan become an important global trading port. "When Mendelsohn first pitched California City, he saw it as a rival to L.A., even bigger than L.A.," said Geoff Manaugh, the futurist and architectural writer. "It was inspired by the greater sprawl of L.A., to make something even bigger."

To lots of people, *sprawl* is a dirty word. It sounds like a real estate–transmitted disease. But in many parts of America—Southern California, the urban West, the cities of the Southeast and Texas—it's how communities grow. Sprawl-wise, though, California City didn't stand a chance. Thousands of lots were sold, but the lack of industry and interest meant that thousands were abandoned. By 1962, only 175 homes had been constructed. Seven years later, a decade after the project had started, the population was a mere 1,700. People needed jobs, they needed grocery stores. Neither was materializing, and neither were future residents. A real estate broker told the *Times*, "Most of the lots were sold sight unseen, mostly for speculation."

By 1969, Mendelsohn had given up. He sold his stake in the city to a Colorado company specializing in processing sugar beets. He left for Texas and was rarely, if ever, seen again in the city of his dreams. He'd built it, but they hadn't come.

WHEN I ARRIVED in California City, hours before I sank the nose of my car into the sand, I didn't know what to expect. "It's like the painting in *The Picture of Dorian Gray*," Manaugh told me. "You've got this place that tried to be like Los Angeles, totally failed, and became the voodoo version." Manaugh meant this in a positive way; he's caught the Cal City bug and has visited three times. Whereas I couldn't shake the feeling of California City as a fever dream: a dystopian predictor of greater L.A., should the big city start to fail.

California City is a two-hour drive from Los Angeles. On my way, I passed a state landmark called the Oak of the Golden Dream. I'd heard about it before: Supposedly, in 1842, a mineralogist took a nap under the tree and dreamt of gold—and when he found some in the ground nearby, he basically kicked off the Gold Rush.

Mendelsohn's vision wasn't so dissimilar, at least in his own mind. But what was he thinking, really? None of the accounts I found suggested it was a real estate scam. How bloated must an ego be to propose a metropolis, to force a city into existence in the middle of the desert? When I got off the highway, the only road into town ran straight for six miles. For a moment, it felt like I was driving up one of Georges-Eugène Haussmann's long boulevards that lead into Paris. I started to expect colossal architecture to appear. Instead, I got a sign: "Welcome to California City, Land of the Sun."

Gradually, strip malls cropped up. A couple of restaurants, a doughnut shop, a nail salon. Half a dozen real estate offices. And behind them, the endless land.

Compared with everything I'd read about Mendelsohn's ambitions, the reality looked like a mistake.

The Coyote Café is a diner on the town's edge. I took a seat at the counter and asked my waitress if there was anything to see nearby. "I mean, we have a Rite Aid," she said. "And there's a McDonald's. That's about it."

She explained that most people in Cal City, as locals call it, work at the correctional center outside town, the borax mine nearby, or a Hyundai-KIA proving ground for testing cars. But what about the ghost grid? The endless roads that were never used, north and east of the downtown? "Yeah, people race up there. Dirt bikes and stuff. Some

people are out there in RVs. But that's it."

She added, sadly, "We don't even have a bowling alley."

Little of Mendelsohn's legacy survives. I didn't find any statues, not even a street named after him. Central Park is some municipal greenery. Its heralded lake is more like a midsize pond, a water feature for a golf course. I walked around the park and came across an old hotel. A rusting sign read "Lake Shore Inn." Someone had started to demolish the place—the entire back wall of the hotel had been ripped off—but the rest of the hotel was left intact, so its rooms faced out as if mooning the town.

On my way toward the outskirts, I noticed a newish Best Western. How could it stay in business? "We get a lot of business travelers," the clerk at the front desk told me.

A satellite image of California City, whose square mileage makes it bigger than Redwood National Park.

"Corporate accounts, the solar-panel technicians. The weekends are when we have many people visiting. Tourists, bike riders. Especially for the holidays." When I asked what he meant, he launched into a tutorial he'd clearly given before: where to rent vehicles and get off-road permits, even stressing that I'd be able to safely park my equipment in their lot overnight.

That's when I started to connect the dots. And remembered at least a dozen trucks around town I'd seen hauling ATVs or loaded down with dirt bikes in the back.

The road that leads out to the grid is Twenty Mule Team Parkway. The name refers to wagons that, in the late 19th century, hauled borax from Death Valley to Mojave. I stopped to read a plaque by the parkway's entrance. "Not one animal lost their life on the trail and no wagons broke down while hauling over 20 million pounds of borax."

A while later, when my Honda ate sand, I thought back to that plaque. I should have brought a mule. Stuck at least a mile from any road that could lead me to civilization, I rocked the car back and forth a couple times. My wheels spun. Finally I caught some traction, crawled backward—and was free.

The truth is I chose the wrong type of vehicle. California City is an off-roader's paradise. Four-by-fours, ATVs, motocross bikes—all are welcome in Cal City, assuming the drivers pick up a permit in town. I spoke with Oscar Branham, owner of High Desert Cycles. Ten years ago, he used to work out here fixing tires. "The riding's a big deal," he said. "It's been going on forever. Every Thanksgiving, people come from Wisconsin, North Dakota, to ride where their great-grandfathers would ride. Come the holidays, the desert turns into a city. We've had 100,000 people."

I figured he was exaggerating. He wasn't. According to the California City Police Department, last Thanksgiving saw 75,000 to 100,000 people tooling around the desert. It's the town's grand ritual. They've had riders come from France and Israel. In 2008, before the economy tanked, they had a quarter of a million people out there on bikes. "It's a tradition," said Karen Sanders, an administrative technician. "Out here, the riding's family-friendly. Our area isn't as far out as some riding goes. So it's a good place for mom and dad to bring the kids and the RV and all the toys and enjoy the desert."

What characterizes a city, ultimately? Often, a specific attribute stands out: entertainment in L.A., finance in New York. I don't know if Mendelsohn would enjoy the irony that the people who get the most out of his streets are ones who'd never be there had homes been built on them. Yet they're buying land. Sanders tells me many off-road families purchase lots in the ghost grid just so they have somewhere to park their RVs.

The desert calls to lone dreamers—and those who travel in packs. Each fall for the last couple years, California City has played host to Wasteland Weekend, a festival celebrating dystopian style. It's a post-apocalyptic Burning Man, and California City's endless desert roads are the perfect stage. A few thousand people dress up and outfit their cars like they're auditioning for *Mad Max*. There are fire dancers, ersatz fashion shows, gladiator fights in the sand. In a way, the same adventurous spirit that sent Mendelsohn into the desert to make something out of nothing is being reincarnated, except the current dreamers wear goat masks.

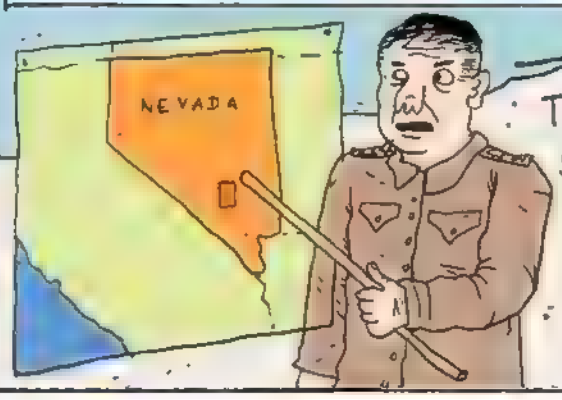
"It's a weird place," Manaugh told me. "There's nothing to see—but that's the point. California City rewards people who approach it with an imaginative sense of what it can be." ❀

A BRIEF HISTORY of ATOMIC TOURISM

How Americans stopped loving the bomb

written and drawn by Lucas Adams

In 1946, as the Cold War grew hotter, the United States government began testing atomic weapons over Pacific waters. But the distant location proved costly, so the Atomic Energy Commission (AEC) started looking for a location on the U.S. mainland.



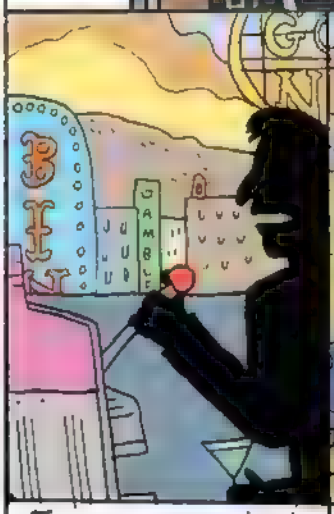
They settled on Nevada, where the government owned 85% of the land. As Los Alamos Scientific Laboratory director Norris Bradbury put it, "The population problem was almost zero."

President Truman approved atomic testing there on January 10, 1951. The first bomb, codenamed Able, was detonated two weeks later at the Nevada Test Site.

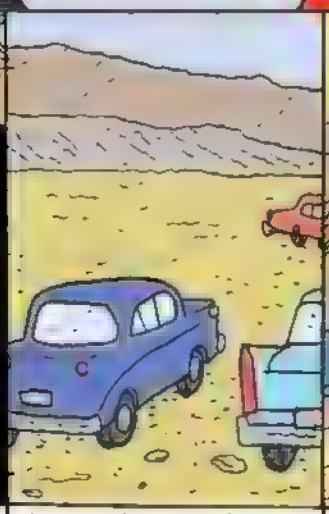
Las Vegas was just 65 miles southeast.

In 1951, Vegas was a small desert gambling den. Casinos, worried that nuclear blasts might shake dice or throw the roulette balls, put up notices: "In such an event, the House's ruling, as always, will be final."

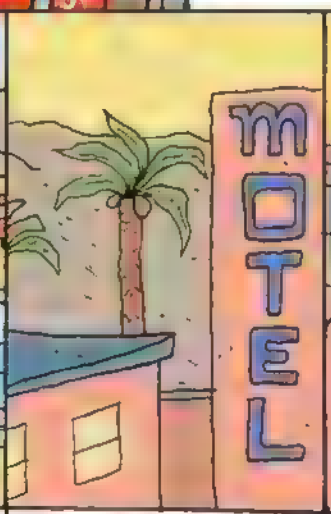
Concerns that the bomb would be bad for business proved unfounded. In Las Vegas, everyone watched.



From casinos that hosted "dawn bomb parties" on the Strip for their guests,



to vista points like Railroad Pass in the Las Vegas Valley where tourists parked their cars,



to vacation spots like the Atomic View Motel (which claimed to offer an "unobstructed sight line to the bomb blast from the comfort of one's lounge chairs"),

to even the porches of local homes, watching the bombs became a key part of the Las Vegas experience.

Las Vegas's business leaders embraced the bomb as another attraction.

The Chamber of Commerce made calendars that recommended bomb-viewing spots and schedules of the bomb tests.

Casinos hawked the Atomic cocktail.[1]

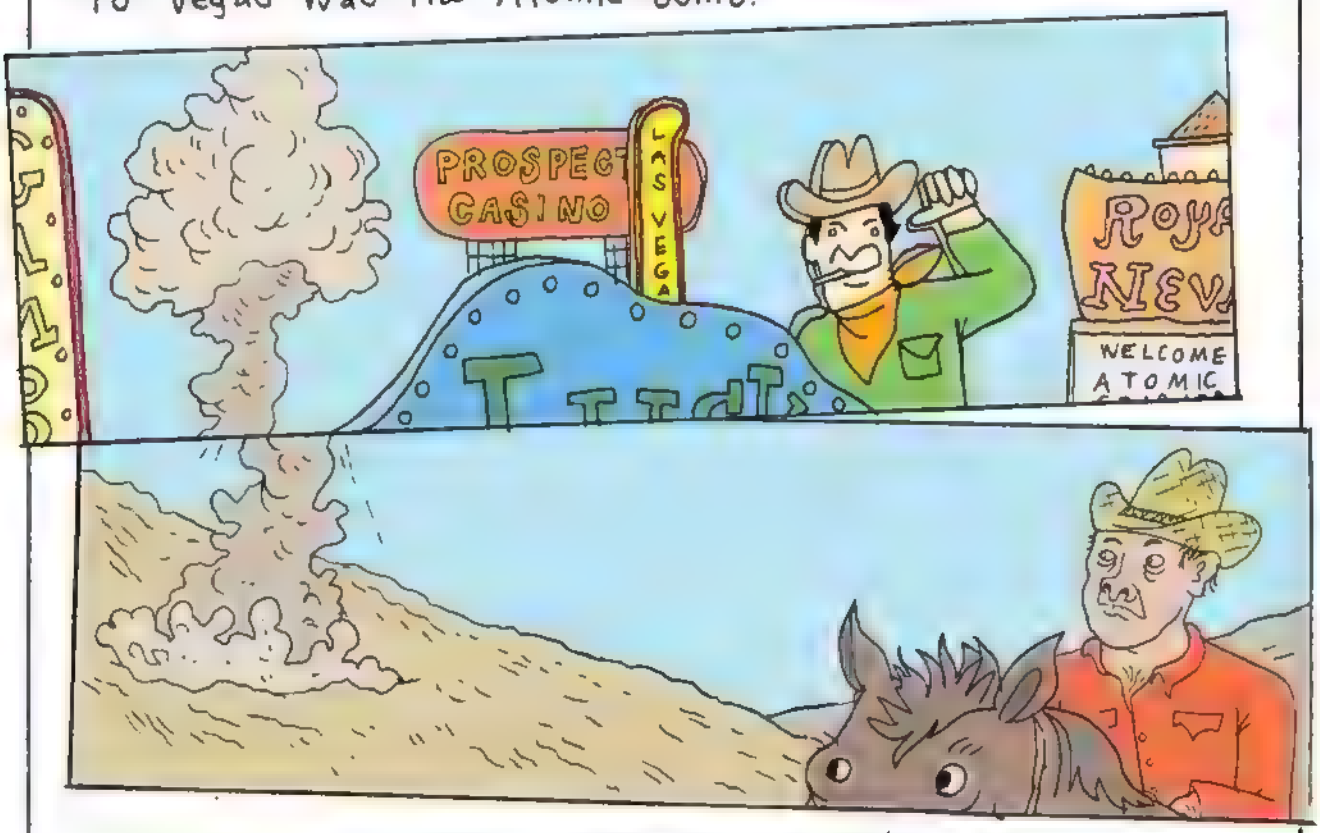
Nuclear-themed beauty pageants like "Miss A-Bomb" were all the rage,

and a young Elvis Presley performed as "America's only Atomic-Powered Singer."

Families would hold bomb-viewing picnics, testing their children for radiation with Geiger counters after the blasts. In 1955, families didn't even need to step outside: A test called Operation Cue was broadcast live over the television and radio.

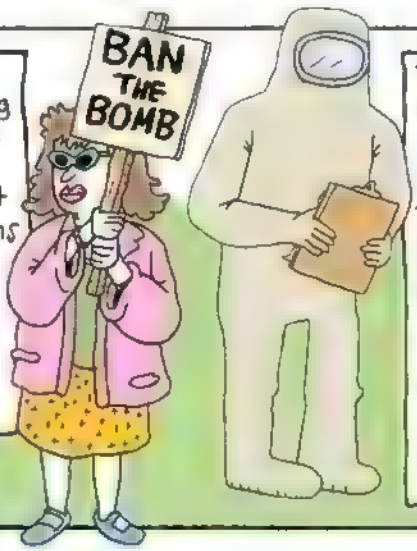
[1] a mix of champagne, vodka, sherry, and brandy

The influx of tourists, test site workers, and thrill-seekers doubled the population of Las Vegas by 1960. Casino owner Benny Binion would say "The best thing to happen to Vegas was the Atomic Bomb."



The AEC encouraged the craze with promotional projects, hiring a ballet dancer to pose for photos with the bombs and deputy sheriff Ken Case to tend to a herd of cattle at ground zero. He carried an "AEC" branding iron and earned the nickname The Atomic Cowboy.

Not everyone was eager about everything atomic, though. People carrying anti-nuclear placards would picket the Strip, and questions were raised about the safety of the tests for those downwind of the blasts.

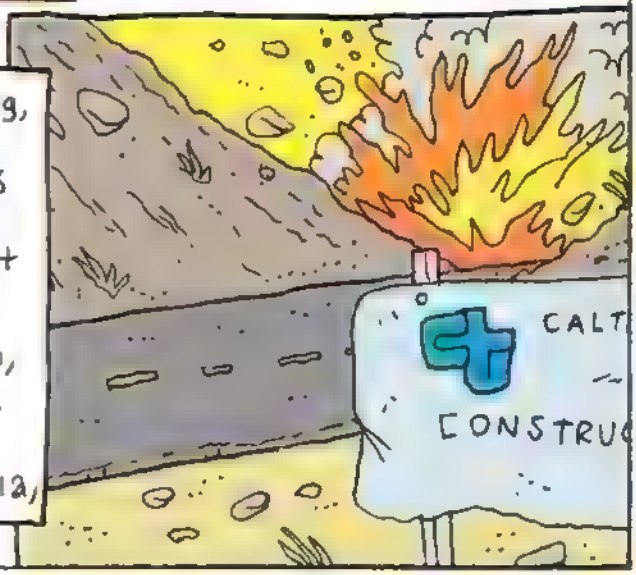


The AEC sought to calm fears: "Your best action is not to be worried about the fallout"—the radioactive remains that fell from the sky. But secretly, the AEC **was** worried. Historian Sally Denton notes that after tests, "A team of Utah scientists... mysteriously appeared and went through the streets of Las Vegas in white coats sampling people," testing for radiation.

Unfortunately, the concerns were founded. Atomic Cowboy Ken Case grimly noted of his herd: "They got cancer and we got cancer, only the animals were so much closer to the ground that they died faster."

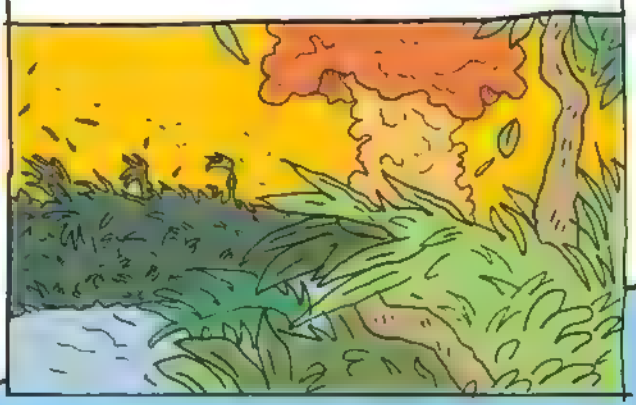
It wasn't just wildlife—thousands of citizens downwind of the blasts were exposed to radiation, and many suffered health complications. Even John Wayne, who had filmed the derided Genghis Khan epic *The Conqueror* relatively near the test site, may have been exposed. When Wayne died of cancer in 1979, a Pentagon representative said, "Please, God, don't let us have killed John Wayne."

Despite alarms to halt testing, the AEC continued. One of the most outlandish ideas was championed by Edward Teller, father of the H-bomb. Project Plowshare aimed to use nuclear weapons for civilian, nonmilitary construction projects. Plans included using bombs to widen a highway in California,

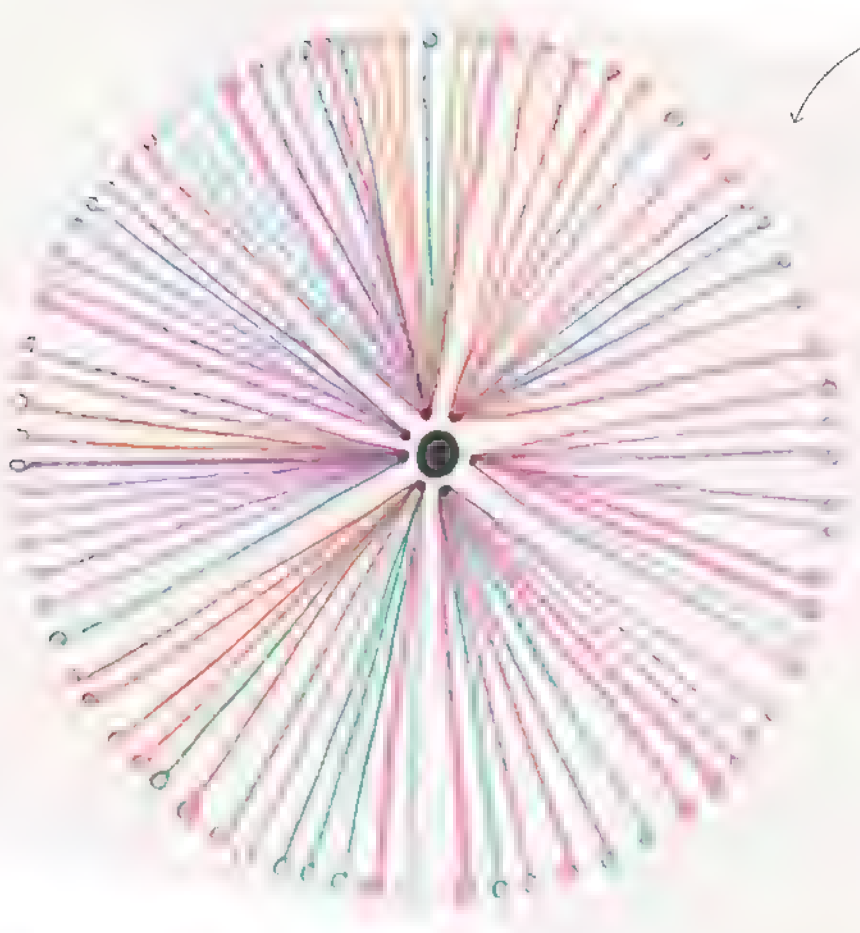


build a harbor in Alaska,

and carve a canal through Nicaragua nicknamed The Pan-Atomic Canal. They were aborted after significant debate.



When President George H W Bush put a moratorium on nuclear testing in 1992, a total of 928 tests had been conducted at the site. More than 800 bombs had been detonated underground. Decades earlier, in 1963, world leaders had signed the Limited Test Ban Treaty, putting a stop to dangerous above-ground testing — and spelling the end of America's fascination with atomic tourism.



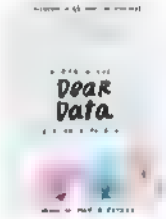
READ THIS!

GRAPHIC TRUTHS

How a pair of artists used the postal service to make data feel more human

BY MEG RUBOZIAN

In 2014, two artists—Brooklyn's Giorgia Lupi and London's Stefanie Posavec—decided to send each other postcards, weekly, for an entire year. But not just any postcards: Each week, the pair selected a new theme and manually collected personal data. Like: How many doors did they pass through? What did they complain about? When did they laugh, and with whom? They charted the information and mailed each other their finished products. Their book, *Dear Data*, features images of the 104 postcards, supplemented with anecdotes and wisdom that emerged along the way. "In this time where we sort of breathe by refreshing our feeds," says Lupi, "we wanted to show that there's value in taking time for laborious data collection." And surprisingly, charting their lives led to a new sort of intimacy. Or, as Lupi put it, "We weren't afraid to share even our worst selves—you're not afraid of sharing drawings and numbers and symbols."



Dear Data, by Giorgia Lupi and Stefanie Posavec, is available September 6 (Princeton Architectural Press, $35).

THE "WEEK OF APOLOGIES" LOOKED AT HOW OFTEN THE WOMEN SAID SORRY. POSAVEC DREW OLIVE BRANCHES TO SYMBOLIZE HER DESIRE TO MAKE PEACE."

THE FRONT OF EACH POSTCARD S AN E..EGANT COMP..AT ON OF DATA THE BACK IS A..EGEND THAT EXPLA NS HOW TO READ T DLR NG THE "WEEK OF DES RES" POSAVEC NCL..DED SOME "FAKE WOR..DLY AND NOB..E DES RES" IN THE LEGEND

FROM
S POSAVEC
LONDON
UK

DEAR DATA - WEEK 13

A WEEK OF DESIRES*

OR, A WEEK OF HOW SELF-CENTRED I AM...

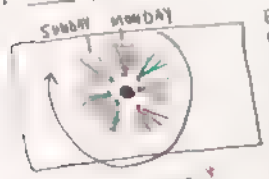
THE DATA: I TRACKED WHENEVER I FELT I REALLY DESIRED/WANTED SOMETHING TRIED TO BE AS HONEST AS POSSIBLE.*

*ALTHOUGH I'VE FOUND WAYS OF OBSCURING SOME NEEDS/DESIRES... A DATA VIS IS NEVER 100% RIGHT. I LIKE A BIT OF MYSTERY

TO
GIORGIA LUPI
BROOKLYN, NY
USA

BY AIR MAIL

HOW TO READ IT



EACH DESIRE IS REPRESENTED BY A COLOURED LINE. DESIRES ARE DIVIDED INTO DAYS, AND ARE ORGANISED IN CHRONOLOGICAL ORDER

DESIRES*

- HAPPINESS FOR ALL
- BASIC HUMAN NEEDS: SEX / EXERCISE / SLEEP / NEEDING THE BATHROOM ... I WILL LEAVE IT TO EVERYONE ELSE TO GUESS!
- APPEARANCE-RELATED: TO LOOK BETTER, ETC.
- BUSINESS: I ALWAYS WANT MY BUS TO TURN UP!
- FOOD / DRINK: COFFEE, ALCOHOL, DINNER, ETC.
- CONFIDENCE
- WORK-RELATED: TO COME UP WITH IDEAS, BE A BETTER DESIGNER
- DESIRES RELATING TO FRIENDS
- CLEANER AIR FOR THE WORLD
- DESIRE RELATING TO ANXIETY
- NEW CLOTHING: NEW COAT, SCARF, CARDIGAN
- WORLD PEACE
- ENDING HUNGER

FOR "URBAN WILDLIFE" LUPI CLASSIFIED THE DOGS SHE MET ON THE STREETS OF NEW YORK BY SIZE, COLOR, FUR, CUTENESS, AND TENDENCY TO BARK

FOR THE "WEEK OF PHONES," LUPI SORTED HER APPS BY FREQUENCY OF USE

FOR THE "WEEK OF SCHEDULES," LUPI MARKED EACH TASK SHE COMPLETED WITH A DIFFERENT SYMBOL. THE COLOR SIGNIFIES WHO THE TASK WAS FOR

POP CULTURE SYLLABUS

KNITTING

WOOLLY BULLIES

In the Middle Ages, knitwear was reserved for the rich and powerful, and only men were allowed to pick up knitting needles and join professional knitters' guilds. With the Industrial Revolution, knitting became a hobby for women, but even well into the 20th century, men were knitting—including, as the book *People Knitting* illustrates, Hollywood heartthrobs like Gary Cooper. During WWI, schoolboys formed clubs to knit socks for soldiers fighting overseas, encouraged by rousing Red Cross ditties like "Johnny Get Your Yarn."

READ *People Knitting*, by Barbara Levine (Princeton Architectural Press)

FEELING KNOTTY

The act of knitting requires fine motor skills, complex pattern memorization, visual acuity—in short, it's a brain workout. The virtual Museum of Scientifically Accurate Fabric Brain Art repays the favor by presenting the organ as an artistic model, rendering PET and fMRI scans in fabric and yarn. The collection includes works by developmental psychologist Marjorie Taylor and psychiatrist Karen Norberg, who create art that combines their hobbies—quilt making and knitting, respectively—with their professional passion. Its centerpiece is Norberg's anatomically accurate knitted brain, complete with sky-blue cerebellum.

SEE The Museum of Scientifically Accurate Fabric Brain Art, harbaugh.uoregon.edu/brain

STRING THEORY

Knitted graffiti? That's just one of the controversial forms of knitted art under the spotlight in the documentary *Yarn*, which highlights female artists around the world making more than socks with the stringy stuff. They're working to free yarn from its docile reputation and using it as a tool for social and political revolution. One way they're doing it is yarn bombing—creating colorful covers for lampposts, statues, and even homeless shelters, then stealthily putting them up in the dead of night. Together, they're making the world a slightly fuzzier place to live.

WATCH *Yarn*. Visit yarnfilm.com for screening information

PATENTLY ABSURD

Leaf Gathering Trousers

Patent: US 6604245 B1 | **Published:** 8/12/2003

With fall comes the ultimate scourge of lawn work: raking leaves. All of those gorgeous, oxygen-giving trees in your yard become instruments of torture, fiendishly littering their leafy bounty all over the lawn and sidewalk.

According to the inventor of the leaf pants, the leaves aren't the problem. It's the rake—that pronged horticultural nightmare that strains backs, blisters hands, and poses a real threat if left lying in tall grass. But a leaf blower isn't the answer either. Instead, the inventor insists, what humanity needs is a method that is "compatible with the natural body movement of a person."

Enter leaf chaps, a pair of zip-on, flexible tubes that slip over pant legs with a net fastened between the two so you can gather leaves as you stroll. The net corrals the leaves and collects them in front of you, so with just a few extra steps, you're forming piles that are easily picked up later.

Not merely convenient, the chaps also promise to make you more productive. Rather than struggle with bulky tools, do something you'd be doing anyway (walking around your lawn), while getting work done! Sure, that walk is more like a waddle, but that's the price you pay for innovation.

PLAY IT AGAIN

3 GAMES TO MAKE YOUR BRAIN SPIN

1 ROMEO AND/OR JULIET

Ever wish you could jump into Shakespeare's classic play and change just one decision, or 20? Ryan North's "Chooseable-Path Adventure" indulges your inner dramaturg. Learn the grave (or genius) consequences of theatrical decisions, solving puzzles and uncovering secrets along the way. You'll barely scratch the surface of the multiverse—there are quadrillions of ways this romance could pan out. Friar Laurence will be so relieved

2 PUNDERDOME

Boost your ability to think under pressure with this game, which prompts players with a situation and topic to see who can come up with the cleverest pun in 90 seconds. The first to win 10 rounds is awarded a prize specified in a Mystery Envelope, which could be a free coffee—or a dirty napkin. To walk away victorious, you'll need more than wit alone: You'll also need to have pun.

3 WHO WINS?

A runaway train is barreling down the tracks. The brakes are shot. Who's more likely to save the passengers: Thomas Jefferson or Joan of Arc? You decide! Select two historical figures out of a pool of 100 to pit against each other in one of 50 challenges. For each figure, there's a biography and ranking of qualities (including wealth, wisdom, fitness, and artistry), allowing for an unforgettable fact trove—and endless debates.

ALAMY (KN TTING)

SNEAK PEEK

FEELING IT OUT

Eden Sher and Julia Wertz's new comics-filled dictionary is full of "words that don't exist for feelings that do."

AAARG, WE'RE OUT OF CLEAN PANTS?!!
F MY LIFE!!!
YOU FINISHED THE LAST OF IT?!
YOU STUPID WITCH!!
WHOA, I WENT TOTALLY OFF MY RAM JUST THERE. SORRY.
YEAH, THAT WAS EMBARRASSING FOR YOU. I'M GLAD I GOT TO SEE IT!

APOLOGETIC + VOLATILE

APOLOTILE

ə'päləṭl

adj. embarrassed after overreacting or being impulsive

PARENT + DIFFERENT ATE

DIFPARENTIATE

ˌdifpə'renSHēˌāt

v. to view one's parent as an objective human in the world

DRAMATIC + DRASTIC

DRAMASTIC

drə'mastik

adj. theatrical and exaggerated in one's reaction to any given situation, compounded by extremeness and often volatility

VULNERABLE + BARRICADE

VULNERCADE

'veln(ə)rkād

n. the barrier surrounding one's heart that protects one from accepting love

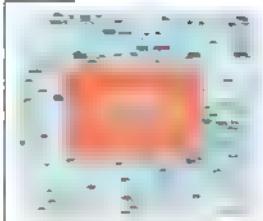
THE PAPER TRAIL

10 MUST-READS FOR FALL

BRAIN CANDY

Flying Saucers Are Real!
by Jack Womack
(Anthology Editions, $40)

Womack has long collected writings about UFOs—from pulp fiction and reported sightings to photos and conspiracy theories. The originals now live in a library at Georgetown University.



The Illustrated Book of Sayings
by Ella Frances Sanders
(Ten Speed Press, $15)

If a French person tells you you're pedaling in the sauerkraut, what they probably mean is that you've lost your train of thought. This illustrated guide illuminates strange idioms from around the world.

Best. State. Ever.
by Dave Barry
(G P Putnam's Sons, $27)

What state is home to the Skunk Ape Research Headquarters, the world's largest retirement community, and a vintage underwater mermaid show? Longtime resident Dave Barry explains (and defends) his beloved Florida.

Atlas Obscura
by Joshua Foer, Dylan Thuras, and Ella Morton
(Workman, $35)

Want to drink a beer at a bar inside a tree trunk in South Africa or visit the world's only museum of human hair art? Plan your next trip with this encyclopedia of off-the-beaten-path destinations.

The Tao of Bill Murray
by Gavin Edwards
(Random House, $26)

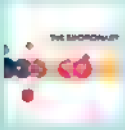
Among the tenets we can learn from Murray: "Surprise is golden. Randomness is lobster." Here, life lessons mix with first-person anecdotes about the most mysterious star of the original *Ghostbusters*.

NON + CON•ERSATION

NONVERSATION

ˌnänvərˈsāSHən

n. a wordless interaction wherein an entire conversation takes place



The Emotionary, excerpted here, is available October 18 (Razorbill, $20).

SEPTEMBER 8
NATIONAL AMPERSAND DAY

HOT DATE

The ampersand's shape predates the word by more than 1,500 years. In the 1st century, when Roman scribes wrote *et* (Latin for *and*), they linked the *e* and *t*. By the 19th century & was the 27th member of the alphabet.

BRAIN KALE

Utopia Drive
by Erik Reece
(Farrar, Straus and Giroux, $28)

A research adventure through America's utopian communities brought Reece to towns named Pleasant Hill, New Harmony, Modern Times, and Utopia—and taught him how to live better in our flawed society.

Adnan's Story
by Rabia Chaudry
(St. Martin's Press, $27)

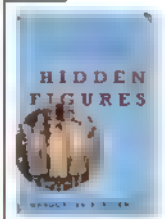
If you've listened to the podcast *Serial*, you might know Adnan Syed as the (wrongly?) convicted murderer of his high school flame, Hae Min Lee. In this book, Syed's family friend presents new evidence that could prove his innocence.

Shirley Jackson: A Rather Haunted Life
by Ruth Franklin
(Liveright, $35)

Learn about the life and historical context that shaped America's literary master of domestic horror. (Pair with the graphic adaptation of Jackson's "The Lottery," from her grandson Miles Hyman, out October 25.)

Playing Dead
by Elizabeth Greenwood
(Simon & Schuster, $26)

Hear from a disappearance consultant, a PI bent on exposing the "undead," and a man who's pulled off the feat of "pseudocide"—also known as faking your own death—without even skipping town.



Hidden Figures
by Margot Lee Shetterly
(William Morrow, $28)

The amazing story of a group of African American women whose mathematical prowess helped America win the Space Race—despite living in the Jim Crow South. Look for the film adaptation, also coming soon.

STOCK

THE QUIZ

BY LUCAS ADAMS

START HERE

1 Jupiter has 67 moons. Which of these isn't one?

- [A] Europa
- [B] Chard
- [C] Kale
- [D] Carpo

2 Bobbleheads were first mentioned in literature by which writer?

- [A] Nikolai Gogol
- [B] Alice Walker
- [C] Gabriel García Márquez
- [D] Virginia Woolf

3 What American industry had its own secret sign language?

- [A] Bricklaying
- [B] Welding
- [C] Shipbuilding
- [D] Sawmilling

4 *Squire's Quest! II*, a video game, was developed to get kids to ...

- [A] Eat fruits and vegetables
- [B] Vote
- [C] Learn pig Latin
- [D] Stop playing video games

5 Which event did not happen to Queen Henrietta Maria's royal court dwarf, Jeffrey Hudson?

- [A] He jumped out of a pie dressed in armor
- [B] He survived a hot air balloon disaster
- [C] He was kidnapped by pirates and sold as a slave
- [D] He beat a taller man in a duel

6 The first Baron Brabazon of Tara was responsible for what aerial feat?

- [A] Making a pig fly
- [B] Flying nonstop across the Sahara
- [C] Organizing a midair tennis match
- [D] Performing the first loop-de-loop

7 The majority of soldiers who fought in the United States 442nd Infantry Regiment in World War II had what ancestry?

- [A] Chinese
- [B] Japanese
- [C] German
- [D] Jewish

8 In 2016, Tufts University researchers discovered that you can keep fruit fresh without refrigeration by using what?

- [A] Soil
- [B] Olive oil
- [C] Mulch
- [D] Silk

9 NATO foreign ministers broke out into a spontaneous sing-along to what song at a conference in 2015?

- [A] "You Can't Always Get What You Want"
- [B] "This Land Is Your Land"
- [C] "You Are My Sunshine"
- [D] "We Are the World"

10 In 2014, divers off the Greek coast mistook structures formed by undersea microbes for what?

- [A] A lost city
- [B] A shipwreck
- [C] A U-boat
- [D] An alien message

YOUR SCORE!

ANSWERS

1. B
2. A (From 1842's "The Overcoat": "[H]is neck seemed inordinately long. Like the necks of plaster cats which wag their heads.")
3. D (Grasping one's biceps meant both *weak* and *week*.)
4. A (Players set healthy-eating goals in attempts to save the Kingdom of Fiveabot.)
5. B (Hudson claimed his height doubled during his time as a slave.)
6. A (In 1909 Claude Moore-Brabazon affixed a pig in a basket to his biplane.)
7. B
8. D
9. D
10. A (Bacteria had changed the chemistry of sea sediment into a natural cement that resembled colonnades.)

0-2 Pretty Good
3-5 The Best
6-8 The Worst
9-10 Also Pretty Good

NASA, JPL-CALTECH, NWERS TV, ATHENS (GREEK STRUCTURES)

A SPECIAL OFFER FOR mental_floss READERS

4 FREE ISSUES OF THE WEEK

CLAIM YOUR 4 FREE ISSUES TODAY!
GO TO THEWEEK.COM/FLOSS

In just one hour a week, THE WEEK makes you the smartest and most well-informed person on your street!

"To be smart, funny, and globally aware is a turn-on for me. That's why I read THE WEEK!"
–DREW BARRYMORE

"I'm a huge fan of THE WEEK."
–JANEANE GAROFALO

"Encyclopedic yet pithy. THE WEEK is journalism at warp speed."
–ARIANNA HUFFINGTON

mental_floss readers ACT NOW!
Claim your 4 FREE issues today!
theweek.com/floss

1,006 WORDS

LOBSTERS' BLADDERS ARE IN THEIR HEADS.

ROUND ONE

BKGD AUDIO

BKGD Audio "Round One" now available on Spotify, Amazon, iTunes, Bandcamp, Apple Music, and other digital retailers.

BKGDAUDIO.COM

DEEP NORTHWOODS AIR,
THE MUSK OF A ROARING
BEAST AND REFINED
LUMBERJACK CONFIDENCE.

TAME THE BEAST®

BEARD, HAIR & BODY CARE FOR MEN

AVAILABLE NOW AT LOCKANDMANE.COM